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ORIGINAL LECTURES.

ON THE SURGERY OF THE BRAIN AND SPINAL CORD.

An Address delivered before the British Medical Association, Glasgow, August 9, 1888.

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MR. PRESIDENT AND GENTLEMEN: Allow me to thank you for the exceptional honor you have conferred upon me by inviting me to address the British Medical Association on my "Recent Investigations in Surgery." It would have been more in harmony with my own feelings to bring before such a meeting the work of others, but this the form of invitation explicitly precludes. From among the various subjects which have engaged my attention it would have been difficult for me to single out one as especially worthy of notice. Fortunately I was so far relieved from that decision by receiving a very direct hint from one whose position in the Association demands respect. In obedience to that expressed wish I now venture to address you on the "Surgery of the Brain and Spinal Cord," a subject which has been of much interest to me, and which I hope may not prove uninteresting to you. In doing so it is necessary to premise, in the briefest possible form, the history of the evolution of cerebral surgery.

THE SURGERY OF THE HEAD IN THE PAST.

Lesions of the head have at all times held a prominent place in the annals of surgery; much has been done by surgeons before our day to advance the healing art as applied to this particular region. Their efforts were, however, chiefly directed to the superficial parts, the skull and its membranes, and were exclusively confined to the results of injury. Their operations were simple, undertaken for the most part upon the primitive evidence of direct visual and tactile observation. There is no reference made by them to cerebral surgery, as it is now known. The brain, whose function was at that time little understood, inspired fear: it was intimately associated with the seat of life, it was the mysterious dome of thought, it gave lodgement in its recesses to the soul, and was surrounded by all the mysticism which a highly speculative philosophy inculcated. Although surgeons did not share the popular belief that to touch the brain was to induce certain death, yet they had just grounds for concluding that to them it was practically inviolable. It was no want of boldness or lack of manipulative dexterity, in which, indeed, they greatly excelled, that determined this reluctance in dealing with brain lesions. *Post-mortem* examination revealed the fact that many cerebral lesions could have been easily reached had the surgeon only known during life at what particular part they had been situated. There were two formidable barriers to the advance of surgery in this region—first, the fact that the majority of intracranial operations were attended by inflammatory action, which so often prove fatal as to cause surgeons to shun active interference; and secondly, the brain was a dark continent, in which they could descry neither path nor guide capable of leading them to a particular diseased area, and did they attempt to reach it, it could only be by groping in the dark. Therefore, they were constrained to confine their efforts to traumatic lesions, and of these to such as afforded external indications of their presence, and which called out clamantly for relief. From the days of Pott to our own, there seemed to be a growing conviction, not only of the impotence, but of the positive harmfulness of active interference, so that the trephine was regarded as an almost obsolete instrument. Yet surgery was fully abreast of the physiology of the day. Such was the state of cranial surgery till 1870.

TWO FACTORS NECESSARY FOR THE INTRODUCTION OF CEREBRAL SURGERY.

However wishful one might be to extend the sphere of surgery to the brain, it was necessary first to adopt means whereby immunity from the inflammation which so constantly attended brain lesions could be secured, and secondly, to endeavor to gain a better physiological knowledge, in the hope that light might be shed upon the localization of cerebral lesions. In the wards of the Glasgow Royal Infirmary, Lister had formulated the theory and wrought out the practice of the antiseptic treatment of wounds, and already much had been done to dissipate the fears of surgeons regarding operations practised on other parts of the body. Experience gained by me showed that not only compound fractures of the skull, but large osseous defects in the cranial vault, accompanied by extensive loss of cerebral substance, were quite amenable to treatment, exhibiting no tendency to inflammatory action, as long as the tissues were preserved aseptic. When this held true of the rough and often septic lesions produced by machinery accidents, how much surer would well planned and carefully executed operations be? This conclusion was subsequently amply confirmed by the results of operations undertaken by me for the relief of injury in which the brain had to be exposed, and from which detached portions of it had to be removed. In such instances no inflammatory phenomena interrupted the even course of healing. A striking feature of these wounds of and operations upon the brain was the absence of false *hernia cerebri*, which had hitherto formed such a conspicuous complication of brain lesions in man, and which had so often marred the success of physiological experiments by extending the zone of irritation and by the fatal results which ensued. It was thus manifest that inflammation arising from exposure of, and operations upon the cerebrum, could be obviated under aseptic conditions.

Meanwhile many workers had been sedulously endeavoring to unravel the intricate and complex questions relating to the structure and functions of the brain. Previously the cerebrum was supposed to perform its function as a whole, in the same way as the liver, heart and kidneys perform theirs, there being no differentiation of function. Broca, in 1861, from observation on human pathology, isolated a particular limited area as the seat of the faculty of articulate language. This very important investigation foreshadowed the localization of function in other cortical centres, for if the existence of a definite function confined to an isolated area were admitted, then the question arose, how many other centres with specialized functions might there be? Broca's discovery was thoroughly iconoclastic, it shook the notion entertained regarding the unity of brain function to its foundation, it awakened thought and made men explore anew, with critical eyes, fields which previous investigators were supposed to have exhausted. Dr. Alexander Robertson, of Glasgow, suggested, in 1866, that there were separate sets of fibres for the conveyance of special motor impulses from the cortex. Hughlings Jackson, in 1869, stated that there were many limited areas on the brain connected with separated and distinctive functions, founding his opinion, not on speculative deductions, but on clinical experience, and on the direct observation of pathological facts. The inception of the idea that there was a portion of the brain whose function was related to motion was treated with extreme scepticism, and the suggestion was likely to have long remained a speculative question had it not been for the advent of another and more direct mode of examination. This new departure consisted in the performance of experiments upon the lower animals by Fritsch and Hitzig, who, in 1870, published an account of their observations. They demonstrated the existence of a series of circumscribed areas on the surface of certain of the cerebral convolutions, the electrical stimulation of which caused, on the opposite side of the body, coördinated movement in distinct groups of muscles. These were momentous facts, destined to revolutionize former ideas of cerebral function. But their full force and significance were not recognized, in this country at least, until Ferrier's observations on the brains of animals, undertaken to put to an experimental proof the views entertained by Hughlings Jackson, were published in 1873. Then the mind of the physiological world was fairly awakened. The suggestions of Hughlings Jackson, on the motor cortex, became crystallized. Another link in the unity of the plan of creation was manifest, as even in the higher and more complex brain of man parts existed whose function found homologous expression in that of the lower animals.

THE INITIAL HISTORY OF CEREBRAL SURGERY.

This extended physiological knowledge enabled cerebral lesions to be more accurately localized, while my experience showed by preserving aseptic the parts operated on surgical interference with the brain could be robbed of its chief danger.

I. *Case in which the symptoms of focal cerebral disease led to diagnosis of lesion in Broca's lobe, 1876.*—While in possession of this knowledge a case of cerebral abscess presented itself to me in July, 1876. The general symptoms of this affection were clearly manifest. A cicatrix on the forehead marked the site of an injury under which the skull was bare. Had this cicatrix been taken as a guide to the localization of the abscess and an operation performed there, no abscess would have been found. But other phenomena were exhibited which enabled its seat to be definitely recognized. A convulsion commenced on the right side and gradually involved the whole body, accompanied by loss of consciousness. On its cessation absolute hemiplegia of the right side was present and remained for two hours, during which the patient was aphasic. Both these phenomena became much less marked at the end of this period. From these symptoms the abscess was diagnosed to be situated in the immediate vicinity of Broca's lobe. It was evident that the whole of the base of the left third frontal was not involved in a destructive lesion, otherwise the aphasia would have persisted for a much longer period, and it was probable that Broca's area had become involved in the inflammatory zone surrounding the abscess. Trusting to these localizing symptoms, it was proposed to open the abscess aseptically by exposing Broca's lobe. Unfortunately, the result of a consultation was decidedly to negative this proposal. The parents then refused consent, notwithstanding the assumption by myself of the sole responsibility of advising and performing the operation. Thirty-six hours afterward the convulsions returned and persisted until a fatal issue ensued. After death the friends acquiesced in the proposal to have the operation performed, just as it would have been, had permission to do so been granted, during life. The skull was trephined, the brain exposed and an instrument was introduced through the third frontal convolution for half an inch, when pus flowed through the incision, proving the accuracy of the diagnosis, and giving poignancy to the regret that the operation had not been permitted during life. The abscess, about the size of a pigeon's egg, was situated in the white matter of the basis of the second and third frontal convolutions. The blade of the bistoury, which had been left *in situ* after insertion through the trephine opening, was found to have penetrated its outer wall. The congested zone in the periphery of the abscess extended from the anterior horn of the lateral ventricle to the cortex at the base of the second, but especially that of the third, left frontal convolution. Here the precise spot in the brain which the abscess occupied was accurately determined from the localizing phenomena induced by the focal lesion, which were trusted as indicating its position, though pointing to a different part of the brain from that which would have been selected had the seat of injury been accepted as a guide. The operation showed how easily the pus could have been evacuated, though the unfortunate refusal to allow it to take place during life leaves uncertain the ultimate issue; but, judging from my subsequent experience, worse cases have recovered after operation.

II. *Case in which motor phenomena were the sole guides to the cerebral lesion, 1879.*—In 1879 a case with definitely localizing motor symptoms was seen by me, occurring in a boy who had a fall six days previously, which occasioned some slight bruising about the face and head, accompanied by a shade of mental obscuration. At the termination of forty-eight hours he was so well that his parents could with difficulty be dissuaded from allowing him to rise from bed. On the sixth day he had a series of convulsions, the twitchings beginning in the left side of the face, gradually involving the left arm and subsequently the left leg, during which consciousness was preserved. Paresis of these parts remained, though sensation was unimpaired. On the following day there was a renewal of the convulsions, the parts being affected in the same order, but the convulsions persisted, and finally became general, with loss of consciousness. Those motor phenomena indicated a lesion on the right side of the brain, pronounced at the middle and lower portion of the ascending convolutions, as the face and

arm centres were the first to show evidence of stimulation. The lesion was of an irritative nature, such as might be occasioned by a spiculum of bone driven into the brain, or by a degree of pressure exercised on its surface. It was clearly not destructive, such as might be occasioned by severe cerebral contusion. Dr. Alexander Robertson was asked to see the case, and agreed with me that the motor symptoms presented a sufficiently clear guide to the localization of the lesion in the lower part of the fissure of Rolando. It was therefore resolved to expose that portion of the brain. As a preliminary the head was shaven, when a scarcely preceptible irregularity was detected in the cranial vault near the coronal suture. When the skull was exposed, a fissure was discovered running across the coronal suture. Trephining was performed at a point slightly behind the auriculo-bregmatic line, and midway between the external auditory meatus and the vertex. This point *happened* to correspond to the posterior extremity of the fissured fracture. There was no blood between the dura mater and the skull, but the dura had a very dark color. This membrane was opened, and gave vent to two ounces of fluid and coagulated blood contained in the subdural cavity. The operation was conducted aseptically, and the patient made an uninterrupted, typical, afebrile recovery. There was no recurrence of the fits; paralysis of the left arm soon disappeared, and he is living now and in perfect health.

III. *Case in which the symptoms exhibited pointed to lesion in frontal lobe, 1879.*—In 1879 an idiopathic case came under observation, in which the totality of the symptoms indicated a lesion in the left frontal lobe. It occurred in a patient, the subject of a small tumor above the left eyeball in the orbital cavity. A tumor had previously been removed by me from that position and had now recurred. Other symptoms had, however, meanwhile presented themselves. The left pupil was in a state of stabile myosis; there was obscuration of intelligence, slowness of comprehension, want of mental vigor and pain in the head. These pointed to the probability of a lesion in the left frontal lobe, but were not sufficient to permit a diagnosis to be made. The patient was, therefore, placed under the observation of an educated skilled nurse. Some weeks later a series of convulsions occurred, the initial stages of which were carefully recorded by the nurse, without which the key to the brain lesion, as indicated by the convulsions would have been lost, as when seen by me they had become general and threatened speedy dissolution. The convulsions were at the outset strictly limited to the right side, commencing in the face and arms, and confined to these two parts during the initial attacks. The leg on the same side was affected during the third seizure, and ultimately the convulsions became general with complete loss of consciousness. These phenomena were construed as indicating extension of the irritation to the lower and middle portions of the ascending convolution, and when this was considered along with the former evidence it was concluded that an irritative lesion existed in the left frontal lobe. On these grounds it was resolved to trephine midway between the centre of the ascending convolutions and the anterior aspect of the cranium. At this point a minute nodule, the size of a barley-grain, was detected on the outside of the skull. A large trephine was applied, a disk of bone removed, and a tumor of the dura mater, which was exercising pressure on the brain, was exposed. It was half an inch in thickness at this point, gradually becoming much thinner and spreading all over the anterior two-thirds of the frontal lobe. The tumor was, after a prolonged operation, carefully dissected out, along with the brain membranes where they were involved in the neoplasm. The patient rapidly recovered, was restored to perfect health and subsequently was able to gain her own livelihood. She lived for eight years afterward.

[Dr. Macewen then gave details of the other cases which occurred in 1883—one a tumor in the paracentral lobule, one an encephalitis round a clot situated in the ascending frontal convolution, one an intracranial effusion of blood in the lower part of the fissure of Rolando, all of which were successfully operated on.]

With the relation of these seven cases, all of which occurred prior to the end of 1883, the initial history of the movement ceases to be solely personal to myself. In December, 1884, Dr. Bennet and Mr. Godlee, assisted by Dr. Ferrier, had the first case operated on in London, in which a tumor was removed by Mr. Godlee from the brain.

A FEW POINTS REGARDING THE PRESENT ASPECT OF CEREBRAL SURGERY.

Reference may now be made to a few points regarding the present aspects of cerebral surgery. First, are the localizing motor phenomena reliable guides to the diagnosis of cerebral lesions situated in the motor cortex? My answer is unhesitatingly affirmative. Each case, however, requires to be studied on its own merits; the whole phenomena presented, the *unobtrusive* as well as the prominent features, must be carefully searched for, the degree in which each is present must be accurately measured, and the whole weighed and compared with former experience before drawing a conclusion. The various points upon which reliance is to be placed should be tested, wherever possible, by instruments of precision, instead of the rough impressions conveyed by the hand being trusted. In testing the power of the muscles in brachial paresis the dynamometer will impart much more accurate information than that which can be gained through the sense of touch, and occasionally shades of difference may be determined by it which would otherwise remain undetected. In many cases the evidences of focal lesions are so distinct that a diagnosis is easy; in others they are so intricate that a prolonged and minute investigation is necessary to decipher them, while there are still others in which the signs are so perplexing that at best an approximation only can be arrived at. To lay bare a certain known convolution on a cerebral surface, and observe the results of its stimulation, is an easier task than to take what appears to be a tangled skein of nerve phenomena, such as is presented by many lesions of the complex brain of man, and to relegate each to its true source, and infer from a study of the whole what particular parts of the brain are affected.

VIII. *Epilepsy, Jacksonian, induced by focal facio-lingual lesion. Removal of cyst from brain: cured*—In support of the foregoing the following instances are adduced, and a case is first presented in which the symptoms were so definite and precise that the dignosis was easy, and permitted me to perform the operation on first seeing the patient. He was twenty-two years of age, and suffered from epileptiform convulsions, each lasting from two to three minutes, and as they occurred on an average every five minutes, he consequently had over one hundred in twenty-four hours. The convulsions were limited to the tongue, the right facial muscles, and the platysma on the same side. When they subsided the parts remained paralyzed. Consciousness was retained throughout. Eight years previously he had received an injury to the head, after which his right arm became weak, the weakness persisting, though he was quite able to work. It was clear that an irritative focal lesion existed, confined to the base of the ascending convolutions, causing

a Jacksonian epilepsy. The only question was whether the base of the ascending parietal was involved as well as that of the ascending frontal. The contraction of the platysma on the opposite side has been asserted to be induced by stimulation of the base of the ascending parietal. Dr. Whitelocke reminded me, however, that the platysma is often supplied by a branch of the facial, so that a single lesion in the base of the ascending frontal would be sufficient to account for the whole phenomena. The operation was at once undertaken, when in the lower part of the ascending frontal a cyst about the size of a filbert was found situated partly in the cortical and partly in the white substance of the brain, and was surrounded by a narrow zone of encephalitis. In manipulating the medullary substance in process of removal of the cyst the patient, while under chloroform, had a convulsion confined to the same group of muscles as were affected in his fits prior to the operation. The convulsion ceased with the removal of the cyst, and he has never since had another. The wound healed firmly under one dressing, the paralysis of the facial muscle soon disappeared, and he has since been constantly at work. The power of the right arm has also been increased. Possibly the cyst might have caused indirectly slight pressure on, or had set up an inhibitory action of the middle portion of the ascending frontal. This case affords important evidence of the position occupied by the facio-lingual centre in man, and, on the whole, corroborates that assigned to it by experiments on the lower animals.

IX. *Protospasm of the hallux preceded by sensory impressions and followed by paralysis.*—In another instance a very definite protospasm, accompanied by a sensory impression, gave the key to the localization. It occurred in a girl aged seven, the subject of frequently recurring attacks of severe epileptiform seizures, followed by paralysis of the affected parts. At the onset of these attacks the patient first experienced in the great toe of the right foot a painful sensation of such severity as to cause her to scream out. Shortly after, that toe was firmly extended in tonic spasm, which lasted about five minutes. Sometimes this ended the attack. More frequently it was followed by clonic contractions of the muscles of the right foot, leg and thigh, where the convulsions often terminated. Occasionally they extended to the muscles of the trunk, then to those of the right side of the face and right arm, the contractions ceasing in the order of accession. Rarely did this involve the opposite side, and when they did the patient lost consciousness. Though there was motor paralysis in the affected parts, the cutaneous sensibility remained unimpaired. From the great number of fits which the patient had, following each other in rapid succession, occurring in parts affected with paresis, the result of former attacks, while the cutaneous sensibility remained unimpaired, and, from the limited area affected, it was concluded that the lesion was cortical. The sensory impression in the hallux, followed by tonic, and then clonic, contractions of the same parts, extending to the lower limb, pointed to the upper region of the ascendiag convolutions as the area of irritation. From the general condition of the patient and family history, the lesion was probably tubercular, and, if so, might be multiple. During operations the upper portion of the ascending convolutions was exposed, and, with the exception of a few tubercular nodules—the size of barley grains—adhering to the vessels over the upper part of the ascending frontal, there was nothing visible on the surface. On careful palpation of the ascending convolutions, there was found on the upper part of the ascending parietal a circumscribed nodule buried in the cerebral substance, which, on exposure, by cutting through the gray matter, was seen to be a tubercular tumor, about the size of a hazel-nut, which was easily shelled out. As an immediate result, there was prolonged trepidation, of an erratic kind, affecting the muscles of the right side of the body, but especially those of the arm and the leg. These were continuous for fully a week, thereafter gradually subsiding. There have been no fits for over a year, and the girl is now in excellent health. The marked sensory impression, which this lesion produced, supports Dr. Gower's opinion that the parts in the so-called motor area subserve a sensory as well as a motor function. The localization of the movements of the hallux in the upper part of the ascending frontal has not been borne out by this case (unless the minute barley-grain tubercular nodules attached to the vessels in the pia mater could account for the stimulation), the tumor being found in the upper part of the ascending parietal, but the whole lesion could be included in the ring which Beavor and Horsley place on the upper portion of the ascending convolutions.

With these data from my own experience, as well as from cases reported by Mr. Godlee, Mr. Horsley and many others, it is clear that the motor and sensory phenomena form reliable guides in localization of lesions in the central convolutions.

The diagnosis of cerebral lesions in non-motor regions may be made from sensory phenomena.—The following instance shows this, and is also an example of the difficulty of finding the exact clew to the lesion and how easily it may be overlooked.

X. *Psychical blindness, the key to a lesion in the angular gyrus. Removal; recovery. Medico-legal aspects.*—A man who had received an injury about a year previously suffered from deep melancholy, strong homicidal impulses, relieved by paroxysms of pains in the head of indefinite seat. Though the pain was excruciating he welcomed it, as it temporarily dispelled the almost irresistible desire to kill his wife and children or other people. Prior to receiving this injury he was perfectly free from impulses of this kind, and had led a happy life with his family. Behind the angular process of the frontal there was a slight osseous depression, which could not account for his symptoms. There were no motor phenomena, but on minute inquiry it was discovered that immediately after the accident, and for about two weeks subsequently, he suffered from psychical blindness. Physically he could see, but what he saw conveyed no impression to his mind. An object presented itself before him which he could not make out, but when this object emitted sounds of the human voice he at once recognized it to be a man who was one of his fellow-workers. By eyesight he could not tell how many fingers he held up when he placed his own hand before his face, though by the exercise of his volition in the act, and by other sensations, he was cognizant of the number. He had been in the habit of reading in the New Testament, and when he had so far recovered from his injury he wished to resume his reading. He knew where the book lay near his bed, and could put his hand on it in the dark. One day he stretched out his hand, took the book, recognizing it through the sense of touch, by its smooth leather covers and the deeply indented letters on its back; he opened it, saw what he considered must be the letters, and the blocking of them into divisions for the words, but they were unknown symbols to him, they conveyed no impression of their meaning, the memory of their sign was gone, it was a sealed book to him. These phenomena, however, gave the key to the hidden lesion in his brain. On operation the angular gyrus was exposed, and it was found that a portion of the internal table of the skull had been detached from the outer, and had exercised pressure on the posterior portion of the supra-marginal convolution, while a corner of it had penetrated and lay embedded in the anterior portion of the angular gyrus. The bone was removed from the brain and re-implanted in proper position, after which he became greatly relieved in his mental state, though still

excitable. He has made no further allusion to his homicidal tendencies, which previously were obtrusive, and is now at work.

Such cases of complete mind blindness are rare, and the definite localization in this case will assist in indicating in man what function the anterior portion of the angular gyrus and posterior portion of the supra-marginal convolution subserve.

In cerebral surgery, not only does one require to localize the lesion, to select suitable cases, but also, after exposing the brain and its lesion, to judge when to advance and when to hold the hand. In a case rightly localized from the motor symptoms, a tumor was exposed in the leg and arm centres, on the left side of the brain; but its dimensions were such as to cause me, after carefully contemplating them, to refrain from removing it, as it would have led to hemiplegia of a much more pronounced character than was present. Instead, the vessels which supplied it with nutriment and which ran into its substance from the surface were all ligatured, in the hope that this would effect a restraining influence on its growth. The patient recovered, and is considerably improved. Though the fits are not quite cured they are not so severe as formerly, and are somewhat altered in character.

ANCHORING OF THE BRAIN AND SOME OF ITS CONSEQUENCES.

When injury has been inflicted on the surface of the cerebrum, followed by plastic effusion and cicatricial formation, the superficial substance is apt to become soldered to the membranes, when these remain intact, which, in turn, may be soldered to the skull, or, in the event of their detachment, the brain may become directly adherent to the bone, by means of cicatricial adhesion. Thus the surface of the brain becomes anchored or soldered to its rigid walls. It has no longer the free play within its water bed to expand and contract according to the varying states of the circulation. Each variation produces a dragging of the brain at this spot, and through it the whole hemisphere, at least, is affected. Any sudden physical effort pulls on the brain, producing a slight shock, a momentary disturbance, just as if the cerebrum had received a blow. Vertigo results. People affected in this way cannot rise up quickly, or perform any sudden movement of the body or head, without experiencing a sensation of giddiness, which sometimes causes them to drop. Consequently they are often incapacitated from pursuing their usual avocation.

Following upon this the gray matter of the cortex, immediately surrounding the cicatrix, by the incessant movement, is apt to become unstable, and to produce fits. Some cases of traumatic epilepsy are thus caused. Further, if the cortical irritation be continued, encephalitis is occasionally produced, often appearing in a chronic form, and long remaining so, though susceptible of being lit up into an acute affection. If the temperature remains high, active interference is apt to induce an extension of the encephalitis. Operation in such cases should be, when possible, postponed. The disregard of this advice has, to my knowledge, in one instance, hastened the fatal issue, encephalitis becoming rapidly general.

REIMPLANTATION OF BONE TO FILL THE HIATUS IN THE SKULL.

Osseous defects in the cranial wall have hitherto remained permanent, the surgeon making no effort to fill the gap. The brain, in the majority of cases, has thus been exposed, the thin membrane forming an insufficient covering, the patient being doomed for the remainder of his life to wear some kind of plate as a protection from injury. Since 1873 the portions removed by me from the skull have been carefully preserved, rendered aseptic, divided into minute fragments and reimplanted. Whenever there has been immunity from suppuration, these have grown and the continuity of the osseous wall has been preserved throughout. In a case of injury nearly one-half of the left anterior portion of the skull was broken into fragments, which lay in a confused mass, mixed with brain substance, shreds of membrane, hairs, *débris* of lime and blood. The portions of bone were all rendered aseptic, divided into fragments and replaced, quite a mosaic work being thereby formed. On the tenth day a portion of the damaged scalp having sloughed, exposed four of the reimplanted pieces, two of which, lying side by side, presented a striking contrast—one being suffused with the pinkish blush of life, the other with the pallor of death. With the exception of two fragments which shed, all the others remained, grew and now form a firm, osseous wall affording complete protection. This case, operated on four years ago, will be shown at the demonstration in the Royal Infirmary, along with many others, where lesser defects have been filled. At the same time, a boy, whose humerus has been restored by bone grafting, will be presented. He was operated on ten years ago, and the bone has grown in length and thickness since.

STATISTICAL RÉSUMÉ.

Of twenty-one cerebral cases (exclusive of fractures of the skull or other immediate effect of injury) in which operations have been performed by me, there have been three deaths and eighteen recoveries. Of those who died, all were *in extremis* when operated on. Two were for abscess of the brain, in one of which the pus had already burst into the lateral ventricles; in the other suppurative thrombosis of the lateral sinus had previously led to pyæmia and septic pneumonia. The third case was one in which there existed, besides a large subdural cyst over the one hemisphere, extensive softening at the seat of cerebral contusion on the opposite hemisphere, accompanied by œdema of the brain. Of the eighteen who recovered sixteen are still alive, in good health, and most are at work, leaving two who have since died, one eight years after the operation, from Bright's disease, she in the interval being quite well and able to work; the other, forty-seven days after the operation after the abscess was perfectly healed, from an acute attack of tubercular enteritis.

SURGERY OF THE SPINAL CORD.

Turning to another portion of the nervous system, to which only brief allusion can be made, it is found that certain sensory and motor phenomena due to lesions within the spinal canal are amenable to operations which are attended by a measure of success sufficient to offer a prospect of relief to a distressing and hitherto regarded as a hopeless class of sufferers. The spinal membranes and the cord itself can be exposed and neoplasms and encroachments upon the lumen of the canal may be removed therefrom without unduly hazarding life. The

first operations of this kind were undertaken by me for the relief of paraplegia, due to angular curvature of the spine. In such cases pressure may be exerted on the cord either by connective tissue neoplasms or by direct displacement of the bodies of the vertebræ, both lessening the lumen of the canal. By lifting the laminæ from the affected part the tumor could be removed and relief at the same time given to the compressed cord, were the osseous walls in front found to encroach upon the calibre of the canal. This was successfully carried out by me first in 1883. By making an incision on the tips of the spinous processes and severing the tendinous connections, and then shelling the soft parts from the bone with periosteal elevators, the hemorrhage was so trifling as to be for the most part arrested by sponge pressure, and with suitable instruments the operation, though demanding care, was easy to perform.

Case of paraplegia with incontinence of urine and feces, due to connective tissue tumor at seat of angular curvature of spine, completely cured by removal of tumor and laminæ of vertebræ.—In 1882 a boy, aged nine years, came under observation suffering from complete sensory and motor paraplegia, with incontinence of urine and feces, which had existed for two years previously, but was absolute during the last eighteen months. For three years he had had angular curvature of the spine, most marked between the fifth and seventh dorsal vertebræ, for which he had been treated by extension and plaster jackets. When seen by me the curvature had become fixed by ankylosis of the bodies of the vertebræ. Treatment by extension and plaster jackets was, however, tried again under direct supervision in the hope of amelioration. It proved futile. The limbs were livid and cold, affected with marked spastic rigidity and with wasting of the muscles. The symptoms exhibited pointed to irritation and pressure of the spinal cord about the level of the sixth dorsal vertebra. The paralysis having existed slightly for two years and markedly for eighteen months, and showing no signs of amelioration under ordinary treatment, this operation was deemed expedient. Dr. Alexander Robertson saw this case, and agreed in the hopelessness of any other procedure than the operation. On May 9, 1883, the laminæ of the fifth, sixth and seventh dorsal vertebræ were removed. There was no pulsation in the portion of the cord diffused. Between the theca and the bone there was found a fibrous neoplasm of one-eighth of an inch in thickness, which was firmly attached to the theca, and covered about two-thirds of its circumference. This was carefully dissected off. The cord was then able to expand backward, and its pulsations, which up to this period were absent, began to show themselves, especially opposite the fifth dorsal. Twenty-four hours after the removal of the pressure the limbs had lost their livid color, were distinctly warmer, the spastic rigidity had greatly lessened, the sense of tickling the soles had returned, and that of touch had improved. The first return of movement was observed eight days after. Soon he had perfect control over his sphincters. Six months subsequently he was able to go about without support. Five years afterward he walked three miles to pay me a visit. He attends school regularly, joins in all the games, including football, and he says he feels quite strong.

A second but more aggravated case.—In 1884 another case was seen of a somewhat similar kind, though much more aggravated, the symptoms being so far advanced as to indicate organic changes in the cord itself, which rendered operation almost hopeless. It was only on the urgent and touching appeal of the girl herself that the operation was undertaken. A dense connective-tissue tumor existed between the bone and the theca, which was so firmly adherent to both that in some places the theca was elevated along with the neoplasm. The portion of the cord thus exposed was shrunken to about half its normal dimensions, and lay like an inanimate rod. After the elevation of a sufficient number of laminæ to expose a portion of the cord which pulsated, the pulsations were communicated to this rod, pushing it from above downward, but there were no distensile pulsations in the rod-like part of the cord. From the whole appearances presented at the operation it was considered that there was no hope of her recovering from her paralytic state. However, ten hours after the operation the limbs had lost their lividity, felt warm to the touch and the patient said she experienced a sensation as if she were dreaming that her legs were on and hot water was running through them. From the fourth day after the relief of pressure she had continence of urine and feces, for which alone, she declared, she would willingly have undergone the operation. Sensation quickly returned to the limbs; motion very slowly. Six months after she could move her limbs freely. Eight months subsequent to the operation she walked a quarter of a mile, stated she could perform many light duties in the house, besides attending to herself. She has since been very well and able to enjoy life.

A third case was also successful, but two others have not been so—one succumbed a week after the operation, the others some months later to an attack of tuberculosis. In both of these the temperature was high prior to the operation, and was subject to exacerbations, indicating an activity in the tubercular disease at some part distant from the ankylosed angular curvature. Since this experience no case has been deemed fit for operation in which the temperature did not run an even, regular and continuous afebrile course.

Paraplegia from traumatism, cured by elevating connective tissue tumor and depressed arch of twelfth dorsal vertebra.—From a coal-pit accident a man, twenty-two years of age, received a severe injury to the spine at the level of the lower dorsal vertebra, which caused absolute motor paralysis with incontinence. There was marked hyperæsthesia of the affected parts, which increased in severity during the first three weeks, so that he could not bear to have the floor shaken or his limbs touched. Between the third and fifth week a rapid change took place. At the termination of that period the muscles of the lower limbs would not respond to electricity, they had become so shrunken and wasted that the contour of the bones stood prominently out, and notwithstanding massage of the limbs after the cessation of the pain, the flexor muscles had markedly contracted, causing drooping of the feet and toes and fixation of the joints. Later, the skin over the bony prominences became red, pressure-points and bed-sores formed, irrespective of most scrupulous attention, the urine became ammoniacal and his temperature ran up. It was evident that a fatal issue was imminent unless an attempt to relieve the pressure on the spine was at once made. In February, 1885, this was done. The lower dorsal and the first lumbar vertebræ were exposed. The arch of the twelfth dorsal was found fractured and slightly depressed, and between it and the theca there existed a connective-tissue tumor, measuring nearly a quarter of an inch in antero-posterior diameter, and extending from the eleventh dorsal to the second lumbar vertebra. Both above and below the twelfth dorsal the tumor gradually shaded off to about one-half of its thickness at that point. It was confined to the posterior aspects of the canal. This tumor was carefully dissected from the theca. The same night there was a distinct improvement in the warmth of the lower limbs. He began to move his toes on the third day. A month afterward the contracted tendons about

the ankle and feet were extensively tenotomized to relieve the structural contractions, after which motor power rapidly increased. He was soon able to walk with support, which a year subsequently he discarded; and now he can move about with ease, but with paraplegic gait. [These last two cases were shown at the Pathological and Clinical Society, Glasgow, December 22, 1885, and published, appearing in the *Glasgow Medical Journal*, besides notes of them in the *British Medical Journal*.]

RÉSUMÉ.

Here are, therefore, six cases in which the elevation of the posterior laminæ of the vertebra has been performed. Four of these have completely recovered, and two have died; one of these from extension of tubercular disease months after the operation, and after the wound had healed, leaving one in which the operation possibly hastened the death of a patient who was otherwise in a painfully helpless and hopeless condition.

Such operations are now beginning to be practised by others. Mr. Horsley has, within this last year, published a successful case, in which a somewhat similar operation has been performed, for the removal of a small tumor of the theca, diagnosed by Dr. Gower.

In conclusion, let us remember that the same phenomena by which we are now able to recognize certain cerebral lesions and locate them in precise areas, were exhibited by patients who came under the eyes of our surgical predecessors, some of whom must have had the album of their memory filled with such impressions, yet they saw not their import. They were so hampered by the inculcated physiological dogma of the time that their true significance never dawned on them. The facts were reflected from their brain as objects from a mirror and no more. Gentlemen, there are all around us phenomena each with its hidden truth, obtrusively impressing our senses, and how do *we* fail to read their riddle?

ORIGINAL ARTICLES.

ICHTHYOL IN PULMONARY DISEASES.

BY THOMAS J. MAYS, M.D.,
PROFESSOR OF DISEASES OF THE CHEST IN THE PHILADELPHIA POLYCLINIC.

ICHTHYOL, in common with many other valuable agents, has been introduced by the German medical profession, and it has already achieved a reputation which is likely to be permanent, at least so far as dermatology and surgery are concerned. Whether it will prove as effectual in internal as it has in external medication, remains to be determined by future research, and in the present paper I merely desire to direct attention to the possibilities of the drug in diseases of the respiratory organs.

Ichthyol, or fish oil, its literal English meaning, is a product which is distilled from a bituminous rock discovered about six years ago, in the Tyrol, near Seefeld. According to Professor von Fritsch, the bitumen of this rock constitutes the remains of decomposed animal matters, chiefly derived from fish; hence its name. "The products of distillation of this rock are treated with sulphuric acid and the resulting substance is neutralized either with ammonium or sodium, and the ammonium or sodium ichthyolate is obtained, which consists of a thick fluid resembling tar in appearance. It differs from known tars, vegetable and mineral, not only in odor, but especially in its physical properties. It is soluble in water and partly so in ether and alcohol. It is volatile to a certain degree. It is rich in sulphur, containing about fifteen per cent. in a condition of such intimate union that it cannot be separated without complete decomposition of the substance.

Dr. Unna, who first recommended it as an important application in skin diseases, found that when it is constantly applied to the healthy skin for weeks, and even inclosed by an impermeable covering, it does not produce dermatitis, which would inevitably follow the application, under like conditions, of an ointment containing ten per cent. of sulphur (*Pharmaceutical Record*, May 15, 1885). According to the physiological experiments of Professors Baumann and Schotten, it produces no toxic effects in dogs in less than two drachm doses, while in doses from three to five drachms it brings on copious intestinal discharges. Professor Nussbaum took as much as seventy-five grains himself, without experiencing the least inconvenience. Little is therefore known of its physiological action, and a more thorough and intimate study of the drug in this direction is much desired.

My attention was first seriously called to this substance by the very practical paper on Ichthyol in Surgery, read by Dr. Edward Martin before the Philadelphia County Medical Society last winter, in which he sums up his own study of the action of the drug, externally applied, in cervical adenitis, in inflammatory indurations of the subcutaneous tissue, in furuncles, in cellulitis and in erysipelas, and, with a few exceptions, he renders a very favorable verdict concerning its influence in these diseases. Testimony of a similar character comes from Professor Nussbaum, who recommends it very highly, both internally and externally, in gout, in rheumatism, in hyperæmia of the fauces, of the larynx, of the pharynx, in neuralgia, etc. The latter authority believes that it is in virtue of its power to constrict the capillary bloodvessels that ichthyol reduces congestions and inflammatory swellings of the cutaneous and mucous surfaces; and the surprising rapidity with which it disperses local hyperemias, as it does erythema of the nose, eczema of the face, for example, which often disappear after a few applications, is evidence that it possesses a marked influence on these structures.

These considerations have led me to its internal employment in the various inflammatory phases of bronchial and pulmonary diseases, especially in those which are characterized by severe cough, copious expectoration, dyspnœa, etc. At first I administered it by the mouth alone, then conjointly with inhala-

tion, but, latterly, I have used it almost exclusively by inhalation, believing that in most cases the best results are obtained in this way. By the mouth I give it every four hours, in capsules, each containing from four to six grains, and for inhalation I employ a 25 per cent. watery solution, and allow the patient to breathe it through a Genois' respirator four or five times a day, about one hour each time. It is sufficiently volatile practically to saturate the air which the patient breathes in this manner. Although it seems to have a disagreeable odor, patients do not, as a rule, object to its inhalation; some even prefer it to carbolic acid.

Its good effects are generally manifested in a lessening of the cough, in diminishing the amount of expectoration, in a relief to the dyspnœa and in an improvement of the appetite. Associated with this amelioration of the symptoms there is usually an improvement in the physical signs—the moist râles disappear, showing that the catarrhal proliferation in the bronchial tubes is checked. The dyspnœa which is relieved by ichthyol is not that which is mitigated by nitroglycerin, stramonium or lobelia and which exists in virtue of a spasmodic condition of the bronchi; but it is that which depends on an accumulation or on an undue secretion of catarrhal material in the tubular parts of the lungs.

Ichthyol is not recommended here as a panacea in all kinds of chest affections, but when it is properly adapted to the morbid conditions, that is, when it is given for profuse expectoration, as in chronic bronchitis, bronchorrhœa, pulmonary consumption, secreting cavities, etc., I believe it to be a positive addition to the therapeutics of pulmonary diseases.

I will append the clinical history of some cases in the chest service of the Philadelphia Polyclinic, in the Chest and Throat Dispensary and in my private practice which have been treated with it.

CASE I.—Male, aged thirty-four, was first seen March 20, 1888, when he had a cough and copious yellow expectoration, which had existed for four years. He also suffered from dyspnœa, night sweats, insomnia, had hemoptysis and gives a venereal history. Physical examination showed a small cavity and some mucous râles at right apex. On account of the venereal taint he was placed on eight grains of potassium iodide every four hours

March 24. No better, cough and expectoration same. No change in the treatment.

27th. No improvement. Ichthyol by the mouth, four grains every three hours.

29th. Cough and expectoration much diminished, and thinks he is better in every way. Is now able to sleep. After this date the patient returned to work, from which he had been absent for some time, and has continued to improve ever since. He is still under occasional observation, and there is no doubt that the ichthyol was of much service to him.

CASE II.—February 16, 1888. Male, forty-two years old, stone-cutter, had cough and profuse expectoration ever since 1881, when he had pneumonia. He is losing flesh, has much dyspnœa, especially on exertion, and eats well. Physical examination shows a large cavity at right apex. Four grains of ichthyol every three hours were prescribed for him, and a general amelioration of all his unfavorable symptoms took place. He resumed work a short time since.

CASE III.—February 8, 1888. Male, aged twenty-six, had hemoptysis, some cough and expectoration, swollen vocal bands, and was very hoarse. Dulness at left apex, associated with crepitation. Was treated with indifferent results until the 9th of March, when he received four grains of ichthyol every four hours, and he has gradually improved ever since so far as the symptoms of his case are concerned.

CASE IV.—March 9, 1888. Female, forty-two years old. This is a case of chronic phthisis with quite a large cavity at the left apex, associated with a harassing cough, free expectoration and sleeplessness. She was treated with various palliatives until March 27th, without much relief, when she received four grains of ichthyol every three hours, which gave her more ease than anything else. More recently the inhalation of ichthyol has been substituted for its administration by the mouth, and she says she can readily control the paroxysm of cough by inhaling it.

CASE V.—March 27, 1888. Male, aged twenty-three, has coughed for some time, yellow expectoration, no hemoptysis, dyspnœa, appetite poor, night sweats, losing flesh. Weight one year ago one hundred and thirty-eight pounds, now weighs one hundred and twenty-two pounds. His father, mother and one sister died of pulmonary consumption. Physical signs: tympanitic resonance at right apex, extending to second intercostal space, and dulness from there down to base. Dulness also extends from apex to base posteriorly, associated with crepitation and subcrepitation over whole lung. Afternoon temperature 102⅗° F.

March 31. Temp. 103°. Four grains of antifebrin every three hours.

April 3. Cough less; temp. 101°; same treatment.

5th. Appetite better; added four grains of ichthyol every four hours to the other treatment.

6th. Feels about the same; temp. 104°. Six grains of antifebrin every three hours and same amount of ichthyol.

9th. Temp. 104°. Seven and a half grains of antipyrin every four hours.

16th. Temp. 103°; same treatment.

23d. Temp. 104°. I now gave him a twenty-five per cent. aqueous solution of ichthyol to inhale in respirator in connection with the same dose of antipyrin.

30th. Temp. 102°; same treatment.

May 7. Temp. 100°; cough and expectoration much less, and appetite and general strength much improved; same treatment.

28th. Coughs and expectorates very little and only in the morning; appetite very good; temp. 101°. P. M. Dulness at anterior portion of right lung disappeared, and has diminished behind. No moist

râles audible anywhere, except a few over the site of the cavity; but a slight crepitation at base of same lung in front.

31st. The antipyrin producing an itching rash, it has been discontinued since the 27th inst., and he only inhaled the ichthyol. Temp., 3 P.M., 99¼°.

CASE VI.—April 7, 1888. Male, aged eighteen, cough for eight months, expectoration profuse and yellow in color, sometimes blood-streaked, dyspnœa, losing flesh, night sweats, temp. 100⅘°, in the afternoon. Physical signs: dulness over left lung, especially marked behind, associated with subcrepitation. Exaggerated respiration over whole of right lung. Antifebrin four grains every three hours.

April 16. Temp. 99½°; same treatment.

26th. Temp. 100½°; ordered a twenty per cent. solution of ichthyol in water for inhalation, additionally to the antifebrin.

May 3. Temp. 100°. Says his cough and expectoration are improved, and that he breathes easier after each inhalation. Same treatment.

31st. Temp. 100°. Feels very good; continued the ichthyol inhalation, but substituted antipyrin (seven and a half grains) for the antifebrin.

CASE VII.—This case has been under my care since October, 1887. He was then fifty-three years old and had a troublesome cough, a profuse, tough, gray expectoration, hemoptysis, wasting, night sweats; and the physical signs showed that the upper portion of the right lung was in process of infiltration. After the hemoptysis had been subdued, the constant cough and the excessive expectoration remained as disturbing factors which nothing succeeded in checking until I gave him the ichthyol inhalations.

This case is a curiosity on account of the many agents which I had given him for the relief of his cough, without any decided, permanent benefit. He had received potassium iodide, calcium chloride, mercury, geranium, euphorbia pilulifera, nux vomica, capsicum, chloroform, ether, tar, tolu, menthol, arsenic, ichthyol by the mouth, atropia, hypophosphites, quebracho, both the alkaloid quebrachine and the fluid extract, carbolic acid by the mouth and by inhalation, codeia, camphor, whiskey and cod-liver oil. Unquestionably these agents proved to be of some service, but not one or any combination of them had the same definite influence in controlling the cough and expectoration as the ichthyol had when I gave it to him in the form of inhalation. Both disappeared almost entirely within twenty-four hours after using it, and neither has returned up to the present time. It must also be stated that on account of a slight rise in his temperature he also received antipyrin during the time the ichthyol was employed, to which must be ascribed some of the beneficial effects.

This line of practice, associated with the giving of antipyrin, antifebrin or phenacetin, has been followed in every case which showed a similar disturbance of temperature, and additionally a most liberal nutritious diet was prescribed, together with such pulmonary gymnastics as seemed advisable.

It is our common experience that cough and expectoration in many forms of chronic chest troubles, especially in phthisis, are two of the most aggravating factors with which we have to deal, and the favorable results obtained from ichthyol in these, as well as in a number of other cases in which it has been tested, recommends it at least for the alleviation of these symptoms and probably also for the amelioration of the local physical conditions which have been witnessed in several instances.

Whether ichthyol, by acting on the capillary bloodvessels, checks the inflammatory changes in the lungs, or whether, by means of its large percentage of sulphur, it merely disinfects the bronchial tubes and in this way inhibits the catarrhal processes, or whether it acts in some other manner are questions which must be left open for future investigation.

CASE OF CHRONIC ATROPHIC ASCENDING PARALYSIS, WITH SCLEROSIS OF POSTERIOR ROOT ZONES.

BY HERMON C. GORDINIER, M.D.,
OF TROY, N. Y.

May 5, 1887. Mrs. B., æt. forty-five years. Mother died of phthisis; father, of hemiplegia; brother, of some form of paralysis; has a sister, who several years ago had hemiplegia and has since developed epileptic fits, with distinct aura. Patient has had no previous acute illness since childhood. Denies syphilis. Has had eleven miscarriages. Present sickness began eighteen months ago. Patient noticed that on physical exertion she became excessively tired and felt very weak and exhausted; soon after, was compelled to give up all work about her house. At the same time, muscular twitchings began in the right leg; the leg became weak and dragged, and, in order to walk, she had to push a chair before her, or to use two sticks; locomotion soon became so difficult that she was obliged to take to bed or sick-chair. The muscular twitchings annoy her very much and are confined to the muscles of the calf and thigh of the right side, which are wasting rapidly. Muscular twitchings are seen in the right forearm and arm; muscles of hand are atrophied. Bladder and rectum normal.

Physical examination.—Patient much emaciated; face pale; hearing acute; smell and taste normal. No strabismus. Muscles of legs markedly atrophied; no fibrillary twitchings to be seen in the muscles of the lower extremities. The interossei and thenar muscles of right hand wasted. The normal fulness of thenar eminence much flattened; base of first metacarpal bone very prominent; no abduction of index finger; marked depressions between the metacarpal bones, due to wasting of lumbricales. Extensor muscles of hand rapidly wasting; fibrillation distinct in the muscles of the right upper extremity; hand in *main-en-griffe* position. Muscular twitchings beginning in left hand. Rapid atrophy of

interossei and muscles of the ball of the thumb. Irritability of the muscles exaggerated. Reflexes: patellar tendon reflex on right side absent, slight on the left; no foot or rectus clonus; triceps reflex normal. Pupils react to light and accommodation; pupils equal; no change in the disks. Temperature, tactile, painful and muscular senses normal. Grip of hands weak. Extremities cold and little cyanotic.

Electrical examination.—Reaction of degeneration present in the muscles of the lower extremities; they do not respond to the strongest faradic current. The only muscles that do respond in right upper extremity are a few flexors, and the supinators, biceps and deltoid give a sluggish response. Muscles of left hand and forearm respond but slowly to moderate currents. Biceps and deltoid give quick contractions. There are no symptoms of bulbar paralysis, no atrophy of intercostal muscles, no dyspnœa, no headaches. Lungs emphysematous. Heart normal. Urine contains neither albumin nor casts.

16th. Fibrillation has extended to pectoral, rhomboidei, supra- and infra-spinati and lower part of trapezii; has slight dyspnœa; is very weak; tires easily.

June 19. Muscles of back wasting quite rapidly. Bulbar symptoms first noticed; considerable difficulty in swallowing; marked dyspnœa, choking sensations, inability to cough or raise mucus collecting in larynx; changed voice.

27th. Bulbar symptoms progressing; dyspnœa and difficult deglutition very annoying; patient has had no pain or sensory disturbance; no change in sensation.

July 22. Patient very weak. Muscles of left forearm much atrophied; hand in the bird-claw position; muscles do not respond to the strongest faradic currents. Respiration mostly costal; slight nystagmus; marked lordosis; back muscles much wasted, and fibrillation very marked. The normal appearance of the face presents a striking contrast to the rest of the body, which looks like a living skeleton covered with integument.

August 1. Patient died, probably of paralysis of diaphragm.

Autopsy twelve hours after death.—The entire cord and a portion of the brachial plexus were removed; there were no macroscopic changes in the dura or pia mater, and sections of the cord showed no change to the naked eye. The specimens were hardened in a four per cent. solution of bichromate of ammonium. The specimens, after being properly hardened, were sent to Prof. M. Allen Starr, of New York, who kindly furnished me with mounted specimens and made the microscopic examination, which showed the following changes:

(1) In the entire extent of the gray matter of the cord there was a very marked absence of the ganglion cells in the anterior horns. In the cervical segments, where from forty to sixty cells are constantly found in each anterior horn, the number was reduced to six, eight or ten, and in some sections no cells at all were to be seen. Here and there single cells were found in process of degeneration, being swollen and the nucleus absent, or granular, or in a state of fatty degeneration and shrunken; numerous nuclei throughout the gray matter indicated the previous existence of cells which had undergone degeneration. No groups of cells had escaped in the process of degeneration. There was an increase in the neuroglia nuclei throughout the gray matter. There was a very marked increase in the size and apparent number of capillaries throughout the gray matter, both in the anterior and posterior horns.

(2) The appearance of the white matter at different levels. In the cervical region there was a slight increase in the connective tissue trabeculæ throughout the part of the antero-lateral columns lying adjacent to the gray anterior horns; but this was not limited in extent to any functional tract, and there was no evidence of systematic lateral sclerosis. The nerve-fibres were somewhat crowded, but apparently not destroyed by the connective tissue increase.

(3) In the sacral, lumbar and lower dorsal regions of the cord, as high as the seventh dorsal segment, there was a very distinct *sclerosis* of the *posterior root zone*, more marked on the right than on the left side. This was more extensive in the sacral than in the lumbar, and in the lumbar than in the dorsal regions; but in the sacral and lower dorsal segments the posterior median column was not affected at all by this sclerotic change; and throughout all the segments the zone immediately adjacent to the posterior gray horn at its periphery and the area lying on the border of the columns of Goll and Burdach were not affected. The anterior nerve-roots were degenerated, and the cross section of nerves of the brachial plexus showed deficiency of fibres in comparison with normal nerves.

A case is reported by Ross, vol. i. p. 923, with almost the exact anatomical distribution of the lesions as in my case.

INSUFFICIENCY OF THE INTERNAL RECTI MUSCLES.[1]

BY H. F. HANSELL, M.D.,
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THE attention of the profession has been frequently called, in the past few years, to the important *rôle* played by refractive errors in the causation of neurotic symptoms, and it is a well-known fact that headaches of years' duration have been cured by wearing the proper correction of an optical defect. This knowledge is not confined to the profession, but is well known to the laity, and the sufferer from chronic headache does not wait until he has vainly exhausted the pharmacopœia, but seeks at once the relief offered by glasses, provided he has reason to connect his sufferings with the use of his eyes.

The defects of refraction are hypermetropia, myopia and astigmatism, simple and compound. Each causes eye-strain and headache, which can be relieved by wearing a concave, convex or cylindrical glass of the correct curvature, singly or in combination. Most

[1] Read before the Pennsylvania State Medical Society, June, 1888.

cases of functional headache which come under the notice of the ophthalmic surgeon may be classified under two heads: 1st. Those due to accommodative strain depending upon some error of refraction. 2d. Those due to an insufficiency of one or more of the extrinsic muscles. The causation of the first class is well understood and the treatment eminently satisfactory. To the second class I wish to invite your attention in this brief paper.

The diagnosis of insufficiency is attended with many difficulties, and thus far no accurate instruments or methods have been devised which at one examination can detect, with any degree of certainty, a want of coördinative action on the part of the recti muscles. The simplest and most reliable method for distance is by the use of prisms and the candle or small gas flame, and for near by, prisms and a modification of the Gräfe test.

In testing for errors of refraction 20′ is considered infinity—that is, rays of light coming from an object of small size at that distance are practically parallel and focussed by the emmetropic eye on the retina with no effort of accommodation, and so each eyeball is in a position of rest and its axis parallel to that of the other, and an object seen at 20′ distance makes an image on corresponding parts of each retina and is seen single. The extrinsic muscles are seen relaxed, and if they are in equilibrium the lines of vision running from the fovea of each retina meet on the object at 20′, forming a very acute angle; this angle is, however, not regarded, and these lines are said to be parallel. Now, if for any reason one eye is diverted, the rays of light from the object will not fall on the fovea but on a neighboring part of the retina and double images will be seen. If these images are in the same horizontal plane, the deflection will be caused by a want of equilibrium between the external and internal recti muscles; if in the same vertical plane, by that of the superior or inferior rectus. When the image seen by the right eye is to the right of that seen by the left, homonymous diplopia results: the equilibrium is disturbed, the eyes are converged, the external recti are relaxed and the internal contracted; and if it is to the left, crossed diplopia, the opposite condition, obtains.

These laws hold for testing at the near point or reading distance. Here Gräfe's test, which consists of a dot with a line running through it vertically, is usually employed. Practically this test is more exact if the dot without the line is used, as suggested by Prof. Wm. Thomson, for when there is a tendency to double vision and the insufficiency is not easily discovered, the line stimulates the brain to preserve the equilibrium. When an insufficiency of high degree exists the patient will complain of double vision both for far and near, and the degree of deflection can be readily ascertained by the above methods; but when the insufficiency is only suspected, and no complaint is made of double vision, the tests must be modified by the induction of vertical diplopia by means of a prism.

For obvious reasons the brain refuses to recognize double images, when by muscular effort it can control it. A patient with even a decided insufficiency of the muscles either side will maintain that he sees but a single object, as he really does, because he has enough power to hold his lines of vision parallel for distance or converged for near. If, however, a prism strong enough to overcome the superior or inferior rectus be placed vertically before either eye he will have vertical diplopia. Now, if the side muscles are in equilibrium in testing for distance, one light will be directly over the other, or, for near, the two dots will be in a vertical line; but when the internal muscles are too weak and the lines of vision diverge, the patient will have crossed diplopia, and, if the external muscles are too weak, homonymous diplopia. The prism placed horizontally, which is necessary to bring the light or dot back to the vertical line, will be the measure of the insufficiency.

Effects of refraction. Latent divergence is more common than is supposed. It is most frequent in myopia, but is not uncommon in hypermetropia and emmetropia and is more constant with myopia than latent convergence with hypermetropia. This is due to the relation of accommodation and convergence. When an emmetrope fixes a small object at 14″ distance with both eyes, he uses just as much contraction of the internal recti as will bring the centre of each retina opposite that object. If we cover one eye, the direct stimulus of the convergence is removed, and if, in spite of that, the lines of vision do not diverge, the effort is maintained by the accommodation, which is associated with the convergence. When a myope of one-eighth, for instance, fixes an object 12″ distant, the accommodation is not brought into use, and that stimulus is removed from the convergence. Hence, if one eye is excluded, he has so much the less stimulation than the emmetrope, and the anatomical position of the eye's parallelism is the more readily assumed. A correction of the myopia, restoring the case to one of emmetropia and thus forcing the accommodation, which in turn necessitates convergence, may cure an insufficiency which may be present in an uncorrected case.

The *symptoms* are not dissimilar to those caused by errors in refraction, especially hypermetropia and astigmatism. Reading and the near use of the eyes are possible for only a short time. They give rise to neuralgia, dizziness and nausea, blepharospasm and then, perhaps suddenly, double vision, with the lines and letters running together. The muscles are able to endure the strain of convergence for a limited time, before one eye diverges. Some cases can continue to work for years, by learning to tilt the head in the direction of the affected muscle, while others

are compelled to forego all close application. A cessation of pain and headache occurs at once when vision ceases to be binocular; one eye diverges and the work is done by the other. The case has now become one of relative latent divergence—that is, binocular for distance, monocular for near and, finally, passes into manifest, absolute external strabismus.

The *causes* of insufficiency are not readily determined, but, in general, they may be divided into constitutional and local. The first, which may underlie all cases and predispose to the affection, are so-called malaria, neuropathic predisposition. "Difficulties attending functions of accommodating and adjusting the eyes in the act of vision, or irritation arising from the nerves involved in these processes, are among the most prolific sources of nervous disturbances and more frequently than other conditions constitute a neuropathic tendency" (Stevens's *Functional Nervous Diseases*), exhaustion from overwork or confinement, convalescence from slow fevers, muscular debility, etc. The main local causes are errors of refraction; others are the use of one eye armed with a magnifying-glass in fine work, as watchmaking, long-continued reading, writing and other close application in bad light, etc.

Treatment. The problem in the treatment is to know when the symptoms can be relieved by the prisms, and when, without the preliminary use of prisms, an operation should be advised. Here, as in other domains of surgery, the conservative plan should be followed, both for the general reason that operations are the last resort, and the part is more or less changed from the normal in its anatomy and functions, and for the especial one that in cases which seem at the first examination to be fit for a division of the muscle, the internal rectus not infrequently regains its normal strength in the improved general condition of the patient. Whether the prisms will effect relief or cure depends upon the degree of the insufficiency and the relative strength of the muscles, which in all cases should be ascertained by their power of overcoming prisms. Normally the internal are immensely more powerful than the external, and are able to fuse images through prisms of 50° to 100°, while the limit of the external is reached at 12° to 15°. If the insufficiency is not in excess of 10°, prisms of one-half that strength divided between the two eyes—3° in one, 2° in the other—should be ordered.

In selecting the eye which is to wear the stronger prism, difficulties arise, for insufficiency is seldom the fault of one internal muscle more than the other, but it is in the coördination of both. When double vision is induced by vertical diplopia the patient not infrequently designates the image which is displaced by the prism as the true one. The eye before which the prism is placed sees no displacement, but the object seen by the other eye is the one which seems to have been moved. Insufficiency is primarily a nervous affection, muscular only in its symptoms and manifestations, and the misinterpretation as to the displaced dot must be purely psychical. While the actual displacement when a vertical prism is before the right eye is certainly the image seen by that eye, the brain refuses to recognize it as such, but transfers the displacement to the left, the image seen by which has not been disturbed. In such cases it is impossible to conceive that the insufficiency is in the right or in left internal rectus alone, but must be in the combined action of both—that is, the converging power is too weak for the work required of it. The external recti are not in every case, indeed, not in many cases, stronger than the normal, and not infrequently they are weaker. The act of convergence is not in itself an antagonism between the internal and external muscles, but is an act of the internal alone, as stimulated by the third nerve. If the prism required to bring the dots in a vertical line be over 10° for far and 15° for near, little help can be expected from the wearing of prisms, for the insufficiency is great enough to produce double images. Diplopia for far and near will be a prominent symptom, in the distance, when looking at a single well-defined object, such as the moon, and near, looking at a needle or other bright, small object.

Dr. George T. Stevens, who has contributed largely to the literature of the insufficiency of the ocular muscles, introduces a nomenclature, the main advantage of which is to designate the affection in one word, and by the prefix of that word name the variety. Thus "heterophoria" (*ekros*, deficient; *phoros*, a tending) is the general word for insufficiency of all varieties. This is modified according to the muscle affected: esophoria, a tending of the visual line inward; exophoria, a tending of the visual line outward; hyperphoria, right and left, a tending of the right and left visual line above its fellow. Tendencies in oblique directions may be expressed by a combination of the specific terms.

The following cases, briefly described, have been selected to illustrate the principal symptoms and the principles of treatment.

CASE I.—Miss A., æt. nineteen, an industrious student, who uses her eyes many hours daily in close work, had been for some time, and still is, under treatment for neurasthenia, complained of nearly constant headache and pain in the eyes, unrelieved by a correction of her astigmatism, which she had worn for some years. Insufficiency of internal rectus 2° for distance, 5° for near. Ordered 2° O. U. to be worn over astigmatic correction in reading. Returned in a month with inability of binocular vision for near. Her power of convergence was nearly lost, though she suffered less pain and headache. Tenotomy advised and declined. Returned in a year intensely annoyed with constant double vision. In-

sufficiency for near varied from 15° to 20°. Tenotomy of right external rectus. In a month the symptoms had disappeared.

CASE II.—Mr. G., æt. thirty-five years, suffered for years with asthenopia. Had refraction tested several times, and had worn a correction for a very slight H. without relief. Insufficiency 5° far, 10° near; ordered 3° base in O. U. for near. Returned in five weeks, saying he could use his eyes for three hours with the prisms without pain, under the same conditions under which he had formerly been able to read but five minutes. The insufficiency was unchanged.

CASE III.—Mr. C., æt. twenty-two; suffered from headache for years. Was obliged to give up his college course on account of his asthenopia. Had a moderate degree of M. and As. which had been corrected years before. Insufficiency = far 3°, near 6°. Ordered 2° base in O. U. In one month, could read two hours before headache appeared. In two months, headache entirely gone. In six months, no insufficiency for far or near, and could read all day without pain or prisms.

Conclusions:

1. In all cases of continued functional headache the extrinsic muscles should be examined.

2. Insufficiency is found in E., H., M. and As.

3. Headache due to insufficiency can be relieved by prisms or by tenotomy; by the former if less than 10°; by the latter if more than 10°. In my experience an operation on both eyes has never been necessary.

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TREATMENT OF HYDROCELE BY INCISION OF THE TUNICA VAGINALIS AND BY A NEW PROCEDURE.

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IN THE MEDICAL NEWS of April 7, 1888, my old friend, Dr. W. W. Keen, of Philadelphia, contributes an article on the "Radical Cure of Hydrocele by Excision of the Tunica Vaginalis," the article having been read at the Philadelphia Academy of Surgery, March 5, 1888. In the discussion which followed the reading of the paper (as reported in THE MEDICAL NEWS), Dr. Gross, of Philadelphia, begged leave to correct Dr. Keen in regard to the history of the operation and says:

"The history of the operation is briefly as follows: In 1873, Volkmann resorted to incision of the tunica vaginalis, with drainage and suture of the edges of the tunica vaginalis to the edges of the scrotum. In 1875 he incised the tunica vaginalis, united it with sutures, and also passed deep sutures, bringing the surfaces of the tunica vaginalis together. He was, therefore, the first to excise, as he was the first to incise, etc."

During the discussion Dr. Keen also makes use of the expression "the incision of Volkmann." From this language I have no doubt that Volkmann was the first to announce or report the incision of the tunica vaginalis as a remedial measure for the cure of hydrocele. He was not, however, by any means, the first to practise it.

I commenced the study of medicine, in 1859, with Dr. Samuel Muir, of Nova Scotia, who enjoyed a very extensive surgical practice, being well and favorably known throughout the lower provinces. Shortly after I commenced my studies, a patient came into his office with hydrocele. Dr. Muir remarked that this was a case of hydrocele upon which he had already operated three or four times by tapping and injections of diluted tincture of iodine, and that, having failed to make a cure, he would now proceed to make a free incision, laying open the sac, which he would brush with pure tincture of iodine, also saying that this was the proper treatment in all such cases in which the injection failed to cure or in which the injection was followed by suppuration. As he said nothing about the procedure being new or original with him, my attention was never called to the literature of this operation until I read Dr. Gross's statement.

I have treated, in all, quite a number of cases of hydrocele and have found it necessary to follow my old preceptor's method on two occasions. The first case was that of a French marketman, age about forty, who consulted me in 1869; he had been operated on by tapping and injections several times, and a great deal of inflammation and pain had followed the last injection, about three months before. The hydrocele was large and the scrotum thickened and infiltrated; he was unwilling to have the operation repeated, on account of its frequent failures and the pain and inflammation caused by the last. I made a free incision and brushed the tunic with tincture of iodine; the result was a perfect cure. I saw the man a few years ago; he remained well. The second case on which I operated by free incision was for inflammation and suppuration which followed aspiration and injection.

Recently I have adopted a new and, so far as I know, an entirely original method of treating hydrocele, viz., to puncture the sac with Southay's dropsy trocar, leaving the canula in; after the fluid is all discharged applying absorbent cotton, covering with oiled silk and retaining with a suspensory bandage. As yet I have only aspirated four times; one case was cured, the canula remained in ten or twelve days, there being a few drops of pus in and about the canula. One case disappeared, canula and all; in one case the canula worried the patient and I removed it; and in the fourth case the canula dropped out. In both the latter cases the fluid reappeared, and I have repeated the operation since with the small canula, not leaving it in, but simply to relieve the patient. They both objected to injections.

I have had a canula made by Folkers Brothers, a quarter of an inch longer and with a double bulb. In operating I intended to force the first bulb through the scrotum into the sac, so that it will remain there until it is removed. I attempted to tie the little Southay canula in but failed.

Any one familiar with Southay's dropsy trocars will readily understand what is meant by a double bulb, as each little canula has a bulb on its distal end to prevent it from passing through the skin and being buried in the cellular tissue. The object of leaving the canula *in situ* is to drain off the fluid as it accumulates, thus allowing the surfaces of the sac to remain in contact, when it is expected that they will soon adhere, effecting a radical cure. It is probable that in most cases adhesions would take place after tapping were it not for the reaccumulation of the fluid separating the membranes.

ANOTHER CASE OF EPILEPTIFORM CONVULSIONS FOLLOWING THE USE OF COCAINE AS AN URETHRAL ANÆSTHETIC.

BY J. CLARK STEWART, M.D.,
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READING in THE MEDICAL NEWS of July 21, 1888, the account of a case of death following injection of the urethra with a solution of cocaine, I am led to narrate a case occurring in my own practice, which resembles that reported, though, fortunately, without a fatal result.

A. B., æt. thirty-two, English, came to me for gleet, and on examination of his urethra I found a stricture four and a half inches from the meatus admitting No. 18 F. There were also several slighter constrictions anterior to this, and the meatus admitted only No. 22 F.

There was no reaction after the examination, and one week later I injected the urethra with ʒjss of a four per cent. solution of cocaine hydrochlorate, and proceeded with an Otis dilating urethrotome to cut meatus and anterior strictures and dilate canal quite thoroughly.

I then passed a steel sound, No. 30 F., to the neck of bladder only, and after removing it, patient sat up. He almost immediately said "I feel sick," stiffened out and became unconscious, with widely dilated pupils and rapid and feeble pulse. This condition lasted, perhaps, one minute, when he recovered his senses, though very much dazed. and said, "What is the matter; I feel very queer?"

Then, after a moment or two, he said "I feel badly again," and sank back on the table and became unconscious. He again became perfectly rigid, but this time went on to have violent general convulsions, almost throwing himself from the table. The convulsions were clonic, beginning in face and extending over the whole body, and there was, throughout, partial suspension of respiration and increasing rapidity and weakness of the heart's action. The convulsion lasted, perhaps, two or three minutes, and the patient became deeply cyanosed and then very gradually recovered consciousness, it being about an hour before he was able to leave the office, though there was no repetition of the convulsion.

I saw him repeatedly afterward, and dilated his urethra with the Otis and steel sounds without cocaine and without any disagreeable symptoms, though my having put him on bromide of soda, gr. xxx, t. i. d., may have influenced this.

After closely questioning him I obtained an obscure history of epilepsy showing itself as *petit mal* and concluded that I had to deal with a simple case of epilepsy, and that the convulsion had been caused by the excitement of the operation, perhaps influenced by some specific action of the cocaine.

Reading the report of Dr. Simes's case, I am led to record mine, thinking it may prove of interest from the similarity of symptoms, and from the fact that a history of previous non-convulsive epilepsy was elicited.

In closing, I should like to suggest as a query, to our neurologists, whether cocaine may not have some specific action in precipitating the epileptic attack in predisposed subjects.

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MEDICAL PROGRESS.

Some Indications for the Administration of Chloral and of Morphine.—Both choral and morphine have peculiar uses. The one will not always replace the other. AUFRECHT, of Magdeburg (*Therap. Monatsh.*), recommends chloral, exclusively, for delirium tremens; he has so used it in several hundred cases. He expresses surprise that opium or morphine should yet be used in this condition. It is only since the introduction of chloral that a successful treatment of delirium tremens has been possible. The drug, however, is not to be given in broken doses. Single doses of forty-five or sixty grains in six drachms of syrup and water, several nights consecutively, furnish the best results. The author has found this dosage exceedingly well borne by adults; smaller doses do not answer. He urgently warns against the addition of morphine to chloral; he considers the combination dangerous. He has also had good results from the use of chloral in the eclampsia of pregnancy. If it can be administered, chloral is preferable to morphine in maniacal conditions. In a case of singultus which had persisted for twelve hours, the administration of morphine internally failed of result. After forty-five grains of chloral had been given, the patient slept throughout the night. The following morning, shortly after awaking, the hiccough recommenced. Forty-five grains of chloral were again administered, and, after a sleep of several hours, the trouble disappeared. Not less to be recommended is the use of chloral in the sleeplessness of elderly persons, probably dependent upon beginning atheroma of the cerebral vessels. Small doses, about seven and one-half grains, are advised in the beginning.

The range of usefulness of morphine is more extended. To attain the best results the question of administration by the mouth, or subcutaneously, must be considered.

For the relief of pain, the result of irritation of serous membranes, morphine is only to be used subcutaneously. In the same way, the subcutaneous administration is to be preferred to internal administration in cases of convulsive and painful contractions of canals or cavities, the walls of which are usually composed of unstriated muscular fibre, be it uterus, gall-bladder or intestine. Especially in cases of severe gall-stone colic, should the suffering of the patient not be prolonged by giving morphine by the mouth, but the subcutaneous injection be immediately made. This method is also to be exclusively recommended in all neuralgias, whether severe sciaticas or trigeminal neuralgias or the lancinating pains of tabes. The author finally observes that in melancholia morphine, subcutaneously, affords rest and sleep, while chloral does not seem indicated. Thus, morphine is to be administered in melancholia, chloral in mania. For adults the dose is gr. ⅙ to gr. ¼. In cases of severe gall-stone colic and of melancholia, as much as gr. ⅓ has been used at the first injection. A not inconsiderable range of application belongs to morphine given by the mouth. This method is to be recommended in disorders of the mucous membrane, whether of the air-passages or of the intestinal canal. To relieve the cough of simple bronchial catarrh, as well as that of affections of the pulmonary parenchyma, morphine given internally has proved useful. It occupies the first place in case of gastric ulcer with much pain; in cases of diarrhœa, it gives as good results as opium; it is given with good results in dysentery, without the preceding administration of castor oil, until the tenesmus is relieved and the number of stools diminished. In the worst cases, gr. ¼, two or three times a day, will be sufficient.

The author recommends, in the cases of patients with convulsions and who are unconscious, particularly in the eclampsia of pregnancy, that forty-five grains of chloral in six drachms of water and syrup, be administered through a soft flexible œsophageal tube introduced through the nose. Better results are thus obtained than by injection into the rectum, as in the latter a portion of the injected fluid readily and frequently escapes.—*Memorabilien*, July 6, 1888; from *Centralblatt für die gesammte Therapie*, 1888.

On Sudden Death in Infants.—DR. P. GRAWITZ, of Greifswald, records two cases in a recent number of the *Deutsch. med. Wochensch.* One child was eight months old, the other six months. The usual signs of death by suffocation were found *post-mortem*, and, in addition, a very large thymus gland in each case. It was satisfactorily proved in one case that the child was not suffocated; the other case was somewhat doubtful, and it was also shown that the children enjoyed perfect health up to a few minutes before death, which was preceded by sudden dyspnœa and cyanosis. Virchow, in his work on tumors, states that he possesses a preparation of an enlarged thymus, from a child who had died of asthma. "The thymus was so enlarged," says Virchow, "that I do not see how any one can deny that the dyspnœa may have arisen from its pressure." Only two such specimens are to be found in the rich collection of the Berlin Pathological Museum, which shows the rarity of this condition, taken alone. The question is of great medico-legal importance—*British Medical Journal*, July 28, 1888.

A Peculiar Reflex Manifestation.—THOMAS, of Freiburg (Verslg. d. Südw.-deutsch. Neurologen u. Psychiater), described a peculiar reflex manifestation which he has observed in himself. Moderately strong irritation of the oral mucous membrane gives rise to a sensation of strangury and vesical tenesmus, which occurs even if the bladder is emptied immediately preceding the experiments.—*Wiener medizin. Pr.*, July 1, 1888.

Hot Water in Diseases of the Eye.—CONNOR (*Centralblatt für prakt. Augenheilkunde*) recommends baths of hot water as an excellent means of treatment in various disorders of the eye—from simple catarrh and phlyctenulæ to scleritis, iritis and hyperæmia of the retina. When, with the instillation of a mydriatic, the pupil fails to dilate sufficiently, hot water aids the action; in catarrhal and purulent ophthalmia, it limits the inflammation; in glaucoma and dacryocystitis, it diminishes pain. There are no contraindications to the use of hot water, which acts with varying efficiency according to the method of application. The author usually has a drinking glass filled with hot water, the patient so inclining the head that the affected eye is immersed. The water remains warm for a considerable period, so that the eye may be bathed for some time without discomfort.

If one so choose, he may add antiseptics to the water. This method has the advantage over poultices that its execution does not require an expert. The local action may be thus tabulated: 1. Contraction of the blood-vessels of the eye and of contiguous structures; the ophthalmoscope shows the retinal vessels contracted after such a hot bath. 2. The hot water washes away deranged secretions and excretions, and destroys the germs contained; the bacillus of anthrax, for instance, is destroyed by a temperature of 96° F.; many eyes can support a higher temperature. 3. The healing activity of the reparative tissue or protoplasm is stimulated. 4. The hot water acts directly upon certain conditions of muscular weakness or spasm.—*Memorabilien*, July 6, 1888; from *Centralblalt für die gesammate Therapie*, 1888.

A New Preserving Fluid.—DR. T. M. PRUDDEN gives the following formula for a new preserving fluid:

Water . .	1000 c.c.	(33 fluidounces).
Common salt	100 gm.	(3¼ ounces).
Saltpetre . .	25 "	(℥vj ℈j).
Carbolic acid	5 "	(77 grains).
Glycerin . .	15 c.c.	(℥iij ℈ij).
Amylic alcohol	50 "	(1⅔ ounces).
(or Ethylic alcohol	100 ")	(3¼ ounces).

Specimens should be first soaked in a strong brine and then placed in a large quantity of this fluid. He believed the mixture would be found to serve a useful purpose in the temporary preservation of gross pathological specimens, without changing their color or otherwise altering their general appearance. The mucous membranes were particularly well preserved in the fluid.—*Med. Record*, August 4, 1888.

The Use of Sozoiodol in Affections of the Nose and Larynx.—FRITSCHE, of Berlin, upon the recommendation of Lassar, has used sozoiodol in eighty-eight cases of rhino-laryngeal disease. The results, as given in the *Therap.*

Monatsh. for June, were good. The remedy was used in combination with potassium, sodium, zinc and mercury. The combination with the first two was used of normal strength; that with zinc, of one-fifth to one-tenth; and that with mercury, of one-tenth to one-twentieth. The best results were had in all catarrhal conditions of the mucous membrane of the air-passages, with a tendency to inspissation of the secretion.

In laryngitis sicca and in the dry forms of pharyngeal and naso-pharyngeal catarrh, in which the zinc preparations were used, the cure was complete in acute cases, while in chronic cases marked permanent improvement resulted. The secretion was first liquefied, then diminished. In cases of atrophic nasal catarrh, insufflations of the potassium and zinc preparations caused more marked improvement than other measures; the secretion losing its tenacity and the fetor diminishing. Cases of inveterate ozæna succumbed to the insufflation of the mercurial combination alternating with that of zinc, the local irritation immediately causing a copious, thin secretion, which persisted in greater or less degree, and was followed by disappearance of fetor. In hypertrophic rhinitis and rhinopharyngitis, partly with chronic thickening, the alternate insufflation of the three crystalline combinations proved most successful. With increased secretion the swelling of the mucous membrane grew less, and the erectile tissue contracted, so that respiration became correspondingly freer. The crystalline salts caused a rapid healing of wounds after the use of the galvano-cautery. Tubercular ulceration of the larynx and pharynx rapidly began to clear up and develop healthy granulations, particularly after the use of the zinc salt; complete cicatrization was not noticed, probably on account of the short length of time of treatment. Five cases of nasal and laryngeal syphilis, in part associated with gummatous affections of the velum and of the tongue, were completely cured by insufflations of the mercurial salt, together with mild internal mercurial medication.—*Wiener medizin. Pr.*, July 1, 1888.

Santonin and Santoninoxym.—COPPOLA (*Archiv. pl. Scienze med.*, vol. xi., 1887) shows by experiments upon dogs that santoninoxym, a crystalline substance of similar composition to and a product of santonin, in doses of fifteen grains given internally, does not affect the condition of the animals, while similar doses of santonin are followed by convulsions. The author proved in his own case and in that of others that santoninoxym appeared in the urine four hours after ingestion, while santonin appeared in half an hour. Santonin is thus more readily absorbed than santoninoxym and has slight toxic qualities. The anthelmintic effects of santoninoxym, as shown by clinical investigation, are like those of santonin, and the author believes that the former, constructed by Lanizarro in 1885, will ultimately replace the latter.—*Deutsche medicinische Wochenschrift*, July 12, 1888.

Retention of the Placenta for Seven Weeks.—DR. VARNEK, writing in the *Vrach* on the question of the management of retained placenta, mentions a case which occurred under his charge in the Basman department of the Moscow Artisan Hospital, which he thinks shows that, even when the placenta is found tightly locked up in the uterus several days or weeks after labor, there need be no necessity for recourse to such serious measures as were adopted by Schultze, who in a similar case performed abdominal section and extirpated the uterus. Dr. Varnek's patient was a married woman and had been attended by a midwife, who, after a great deal of very painful intrauterine manipulation, had assured her that she had got the whole of the after-birth away. The patient attempted, after the sixth day, to attend to her household duties. She was, however, very weak, and, as she grew worse and began to suffer from pain in the abdomen and back, she sought, a fortnight after the confinement, admission under Dr. Varnek. She was found to be in a low, weak, anemic state. The abdominal walls were lax. The uterus could be felt as a dense hard mass, extending up to the umbilicus. The external os admitted the finger, but the internal os was much too contracted to permit the cavity to be entered. There was but little discharge, and this was inoffensive. The patient was treated by warm vaginal injections of carbolized water (1 in 50), iodoform suppositories and the internal administration of ergot and ergotine. The condition improved slightly for a time, but in about a month from the time of confinement hemorrhage occurred, the temperature (which had been normal) rose, and shortly afterward the discharge became very offensive. Attempts were then made to examine and clear the uterine cavity. The internal os having somewhat dilated, a partial exploration was made, which revealed the presence of the placenta in a very hard, dense condition, firmly attached to the uterine walls. Persistent efforts, both with the fingers and with a sharp curette, failing to remove it and the patient being much exhausted by the manipulation for which she had been placed on the operating table, she was put back to bed and a prolonged irrigation with a 1 per cent. solution of carbolic acid ordered, a mixture of iodoform and glycerin having been first applied to the interior of the uterus. For the next few days irrigation was practised for from four to ten hours daily, the general condition improving. In a little more than a week a portion of the after-birth came away, which was entirely inoffensive, and the next day the whole of the remainder was got rid of. After this the patient made a rapid and complete recovery. Here the placenta had remained in the uterus fifty days after the confinement, and its ultimate removal is attributed by Dr. Varnek mainly, if not entirely, to persistent and prolonged irrigation.—*Lancet*, July 28, 1888.

Cystisin in Migraine.—From its power to contract the bloodvessels, KRAEPELIN (*Neurolog. Centralbl.*, 1888, No. 1) was led to use cystisin in the angioparalytic form of migraine. One-twenty-fourth to one-twelfth of a grain of nitrate of cystisin, injected subcutaneously, particularly if given at the beginning of the attack, in a half hour relieved the redness, the feeling of oppression and the pain; only slight headache remained. Taken internally, it failed entirely; in spastic migraine it increased the pain.—*Centralbl. für klin. Med.*, July 7, 1888.

The Treatment of Bleeding from the Nose.—WADE recommends the expedient of Hutchinson. The hands and feet of the patient are placed in water as hot as can be borne. This will check the most obstinate epistaxis, without any ill consequences.—*Deutsche medizin. Wochenschr.*, July 19.

Gastroliths.—A curious and, as far as is known, unique case of gastrolith is recorded in one of the Dutch journals. A druggist had a circumscribed tumor in the epigastric region, the position of which varied on respiration, and which was tender on pressure. Medicines had no permanent effect upon it. Spleen, liver and kidneys were normal as to position and size. The appetite was very good and the bowels were regular. Vomiting of a small quantity of fluid containing mucus and bile, but almost always free from hydrochloric acid, occasionally took place. Nausea was constant, and it was said that hematemesis took place, but this was not actually observed. Gradual emaciation took place, the look became cachectic, and indolent swelling of the left supra-clavicular and axillary glands was noticed. The patient was examined under an anæsthetic and the stomach washed out, but exploratory incision was steadily refused. The diagnosis, according to the probabilities, was cancer of the stomach. The case ended fatally, and the autopsy showed that the stomach, which was of normal size, contained a concretion having the outline of the organ and almost filling it. At the pyloric end lay two smaller fragments of the size of hen's eggs. The weight of the tumor was 885 grammes (a little over 28 ounces). It had a strong fecal odor, but contained no skatol. No nucleus was present. Microscopic examination showed starch granules, cells containing chlorophyll, bundles of vessels, but nothing to determine the animal origin of the concretion. Chemical analysis showed that it contained 0.56 per cent. of nitrogen. It was observed that with the exception of the formation in Langenbuch's case described in 1884, which contained no hair, all the others observed in the human subject were composed more or less of hair. In the present case, on the other hand, the tumor was identical in constitution with the "food balls" of ruminants, and stood alone.—*Med. Press*, July 18, 1888.

Salicylate of Mercury in Gonorrhœa and Syphilis.—SCHADEK has tested the usefulness of the salicylate of mercury in gonorrhœa and syphilis. The drug, as used, is an amorphous, white, odorless and tasteless powder, of neutral reaction, with difficulty soluble in water and alcohol, more soluble in glycerin on the addition of soda or common salt, especially if the solution is warm.

He uses the following combination in gonorrhœa:

℞.—Hydrarg. salicylat. . . . gr. iij.
Sodii bicarb. . . . . gr. iij–gr. iv.
Aquæ destill. . . . . ʒ xvij.

In acute cases four or five injections were made daily. Only slight, transient irritation was occasioned. Improvement began after two or three days. Some cases of acute and subacute gonorrhœa were cured in fourteen to twenty-one days; others were not cured at all. The drug is not abortifacient.

In cases of syphilis the remedy was used externally, internally and subcutaneously. The author is reserved as to external use of the drug, as he has not used it sufficiently. Internally it was given in the following manner:

℞.—Hydrarg. salicylat. . . gr. xv.
Ext. et pulv. glycyrrhizæ
q. s. ut ft. pil. no. lx.—M.

Sig.—Three to six pills after meals; never on an empty stomach.

For subcutaneous, or rather intra-muscular, injection, the following suspension was antiseptically used:

℞.—Hydrarg. salicylat. . . gr. vj.
Mucilag. gummi arabic. . ♏ ix.
Aquæ destill. . . . . ʒ iv.

The injections were made at intervals of two or three days; they numbered six to twelve; in one case, however, sixteen were made. The number of cases treated was twelve.

The author summarizes the results as follows: 1. The salicylate of mercury is not less useful as an anti-syphilitic than the other preparations of mercury hitherto used; it is well adapted to the treatment of secondary syphilis; given internally, it causes a rapid disappearance of the milder symptoms and is useful in the after-treatment. Introduced intra-muscularly, the remedy has the power of completely removing the syphilitic symptoms. 2. The drug, unlike other preparations of mercury, causes no unpleasant local complications; in this respect, the salicylate may be considered the best preparation of mercury, because neither by internal administration nor by intra-muscular injection, although insoluble, does it ever give rise to symptoms of local irritation or of constitutional disturbance. 3. The external application of salicylate of mercury is most useful in various forms of syphilitic deposit, causing absorption and cicatrization. 4. It acts favorably in urethritis acuta and subacuta. The secretion of pus speedily diminishes and the other inflammatory symptoms disappear. The remedy is, however, not always efficient.—*Centralblatt für die gesammte Therap.*, July, 1888; from *Monatsh. f. prakt. Dermatol.*, 1888, H. 10.

Salol in the Diagnosis of Gastric Affections.—DR. EWALD gives some results of experiments on the behavior of salol, performed at his request by Dr. Einhorn. Sivers and himself had shown that when salol was given, the appearance of salicylic acid in the urine was delayed by some agents and accelerated by strychnine and electricity, and that as decomposition of the salol could not take place in the stomach, the variations in the times of its appearance in the urine were due to its earlier or later passage from the stomach into the small intestine. Proof of this was also equivalent to proof that strychnine and electricity hastened the passage of food from the stomach. It had been shown before that when a moderate meal was taken salicylic acid appeared in the urine in from three-quarters to an hour after taking 15 grains of salol. It never appeared in healthy individuals in less than three-quarters of an hour, its appearance was sometimes delayed as long as an hour and a quarter. Dr. Einhorn's experiments showed a steady acceleration of the time of the appearance of the reaction after both faradisation of the epigastric region for ten minutes, and ext. strychninæ $\frac{1}{30}$ grain. Hydrochloric acid generally retarded the appearance of the reaction. It usually appeared more quickly when the stomach was empty or after a single glass of water. Carlsbad salts and bicarbonate of soda had a different effect in different individuals, sometimes retarding and sometimes accelerating the appearance of the reaction.

The bearing of the experiments on the motor functions of the stomach was of importance. Salol when taken during digestion was not absorbed from the stomach,

but from the small intestine, as an alkali was required for its decomposition, before which absorption could not take place. Strychnine and electricity, therefore, hastened the passage of the drug from the stomach into the small intestine. Alkalies had different effects in different persons, for the reason that in some they produced an alkaline condition of the contents of the stomach, and decomposition and absorption of salol took place from the stomach itself, thus causing an earlier appearance of the reaction; in the other cases, on the other hand, in which alkalinity was not produced, its passage out of the stomach was delayed. Hydrochloric acid not only did not favor decomposition of the salol, but by increasing the tension of the pylorus it delayed the passage of the salol into the small intestine. Other irregularities in the time of appearance of the reaction were traceable to the varying influence of the nervous system on the motor function of the stomach.—*Medical Press*, July 18, 1888.

Albuminuria in the Insane.—According to the observation of KÖPPEN, of Strassburg (Verslg. d. Südw.-deutsch. Neurologen u. Psychiater), albuminuria is frequent in those with mental disease and sometimes has important and intimate relations thereto. Albuminuria has been observed: 1. In mental disturbances following upon chronic nephritis; an increase of albumin in the urine is concomitant with a condition of stupor and prostration, while a diminution is attended with clearness of mind. 2. In psychoses having their origin in arterial sclerosis. 3. In various forms of delirium, in which the stupor and mental disturbances increase in the same degree as the albumin in the urine. The albumin appears in its ordinary form or as propeptone. Köppen concludes that the albuminuria is caused by certain, yet unknown cerebral influences.—*Wiener medizin. Presse*, July 1, 1888.

Mercurialization in Lying-in Women.—DR. ROBERT BOXALL, at a late meeting of the Obstetrical Society of London (*Lancet*, July 14, 1888), read a paper on the "Conditions which Favor Mercurialism in Lying-in Women, with Suggestions for its Prevention." The question was debated under two separate headings—(1) increased absorption, (2) defective elimination. Under the first head, the site of absorption was discussed; the question whether the solution obtains entrance to the cavity of the uterus when the uterine tube has not been employed was debated, and an experimental investigation undertaken, with a view to determine the point, was related. It was suggested that absorption not infrequently occurs inside the uterus, even when the uterine tube has not been employed, but that it may also take place through the lacerated surfaces of the cervix, vagina and perineum or even through the intact mucous membrane. Reference was made to the experimental research conducted by MM. Doléris and L. Butte, which bears on this point.

With a view to diminish the risk of absorption, it was suggested (1) that not only should care be exercised to obtain contraction of the uterus, but that it should be also carefully maintained, and, above all, that the douche should always be given at such a temperature as will stimulate the uterus to action; (2) that the douche should invariably be administered in the supine position, the uterus at the same time being supervised by one hand placed on the abdomen; (3) that, when the administration is completed, the precaution should invariably be taken of ascertaining that the uterus is contracted by palpating the abdomen, and, if distended, the fundus should be squeezed like a sponge in the palm of the hand and at the same time should be depressed, with the object of evacuating the vagina; and (4) that the surfaces of lacerations about the external orifice should be brought together, and any abrasions which remain should be coated with some material impervious to the solution. Under the second head, the relative eliminative power of the different excretory organs was discussed and especial attention directed to the condition of the kidneys and intestine. The following suggestions were offered: (1) That chronic nephritis, and probably also those changes which occur in the kidneys during pregnancy, may, by diminished elimination, produce an accumulation in the septum; and (2) that the intestine possesses an equal if not a greater eliminating power than the kidneys. With a view to obviate the risks arising from defective elimination: (1) That when the kidneys are affected the sublimate douche should not be employed, or, if used, extreme caution should be exercised; (2) that a free watery flow should be promoted by the kidneys, and that especial care should be directed to this point in hot weather; and (3) that the bowels should be evacuated daily, either by salines or by the administration of such agents as produce copious and loose stools. A tabulated series of eleven cases which presented symptoms of slight mercurialism was appended, and also a fatal case of mercurialism narrated.

The Mechanical Treatment of Erysipelas.—Instigated by the results which Barwell, Freer and Otto obtained by painting with white lead the skin at the borders of erysipelatous inflammations, WÖLFLER (*Mitth. d. Ver. d. Aertze Steiermarks*) undertook some experiments with the mechanical treatment of erysipelas. Concluding that merely painting the skin with varnish—to prevent the admission of air necessary to the life of the coccus of erysipelas—did not suffice to limit the extension of the inflammation, he attempted the simultaneous application of a compressing band, by means of water-tight material and a bandage, and by means of gutta-percha paper prepared with chloroform (traumaticin), but with varying results. Guided by the idea that the application of the bandages was operative less by exclusion of air than by mere mechanical compression, he concluded to replace the bandages and strips of traumaticin by simple strips of adhesive plaster about an inch wide. In four cases thus treated, the author obtained good results; in no case did the inflammation extend beyond the strips of plaster; while in twenty-four cases treated with traumaticin, extension took place in five. The strips must be applied to the healthy skin at the borders of the inflamed area. In severe cases of erysipelas of the head, the hair must be removed; in advanced facial erysipelas, the strips should be applied about the neck. The author ascribes the results of the method, which commends itself for its simplicity and convenience, to the compression, which interposes a greater obstacle to the spread and development of the coccus of erysipelas than the ordinary antiseptic or antacid methods hitherto in vogue.—*Wiener medizin. Pr.*, July 1, 1888.

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SATURDAY, AUGUST 18, 1888.

THE CONTAGION OF PNEUMONIA.

Now that the treatment of pneumonia is receiving an unusual amount of consideration, it may be well to revert, briefly, to some of the other aspects of that disease; and perhaps it is just the fashion of speaking of it as "that disease" that has led to a great deal of aimless discussion concerning its treatment. It was a fancy of Wunderlich's to say that if we could see the lungs as we see the skin, we would have as many varieties of pneumonia as we have of eczema, and perhaps, if we followed up the thought, if we said "those diseases," rather than "that disease," the debating ground would become much plainer. Certainly the researches of the last few years into the causes of pneumonia have not tended to prove the unity of its causation, while all the weight of evidence goes to prove that a variety of micro-organisms, of widely different orders, may produce pneumonias histologically similar. For this reason our knowledge of the etiology of pneumonia is far less than that of many diseases apparently more recondite, though it is even now possible to make some leading generalizations of interest and even to draw some conclusions of practical importance. This has just been done by NETTER, in a very thorough and comprehensive study (*Arch. gén. de Méd.*, Juillet, 1888), and, while his results do not depart essentially from what was known or generally believed, they are interesting from the application he gives them.

According to Netter, pneumonia is a transmissible, contagious disease. The contagion is due to specific, pathogenic microörganisms, which multiply in the diseased focus, and which, leaving the body in various ways, are especially abundant in the products of expectoration. Contagion from the sick is still possible, long after recovery, and for two reasons. The first is: the contagion resists desiccation and may thus preserve its activity outside of the body, on indifferent substances, to which it adheres. The second reason is that the contagion is not destroyed in the patient after the termination of the disease, as are most infectious germs. Long after recovery, perhaps indefinitely, the subjects of the disease have in their mouths active germs, and this activity explains the great number of recurrences in pneumonia and the occurrence of multiple outbreaks in one family or house. The importance of these views, if correct, must be very great, and their bearing on prophylaxis must be of prime importance.

In regard to isolation, great advances have been made in late years over the views formerly entertained. Netter does not believe that a rigorous isolation is necessary in pneumonia. The relatives should not be allowed to pass the night in the same room with the sick, much less occupy the same bed. The danger of the well using the handkerchief of the sick, or *vice versâ*, is not entirely imaginary. In hospitals, cases of pneumonia should not be in small wards, or, if so, should at least be alone. The contagion is but feebly diffusible, and all the cases published show that contagion is especially liable to occur in small rooms badly aired. It is particularly necessary to avoid exposing patients with typhoid fever, acute exanthemata, acute affections of the respiratory tract, nephritis and diabetes to the danger of pneumonia. The tuberculizing influence of hospitalism, in these conditions, is well recognized, and it is quite as true that the diseases named favor the development of pneumonia.

The sputa, being the habitual if not the only vehicle of contagion, must be disinfected. So far as our present knowledge goes, corrosive sublimate is the best means we have for this purpose. In hospitals having disinfecting apparatus, the clothing and linen of cases of pneumonia should be submitted to the same process as in other contagious diseases. Other indications might be drawn from the modern idea of the persistent activity of germs in the mouths of recovered persons, though this is evidently a subject too new for profitable discussion.

These views we believe to express all that can at this time be safely concluded from the study of the microbic origin of pneumonia. Before we can dogmatize about treatment, it would be well to wait, not only until our knowledge of causes is greater, but even until we have made a more careful clinical study of the natural history of the disease than has yet been done.

THE COLLECTING OF STATISTICS, AND THEIR VALUE.

HUNTING, when the object sought for is difficult to find, grows in interest, especially in matters of science, with the scarcity of the object to be discovered; and each new success adds to the satisfaction of the investigator. Tastes in science differ to such a degree that what may be the delight of one man may be an incomprehensible passion to another. If the heart be not in the work, the labor is simply drudgery, and the satisfaction lies only in getting through with it.

It is easy to comprehend the interest that is taken in the discovery of the remains of an extinct animal and its restoration to form, so as to show its size and peculiar characteristics, for many who have little taste for natural science, experience a certain degree of pleasure in looking at the mounted skeleton; but it is not so readily understood how a man can take pleasure in a lifelong study of the family of bivalve shells, or of butterflies and moths, or of the less attractive beetle and spend his days in collecting thousands of specimens. Many of the *lepidoptera*, it is true, are beautiful in the delicate colors of their plumage, for the butterfly has feathers as well as the gorgeously tinted humming-bird; but where are the attractions of beauty in the *coleoptera*, except in the few blue, green and golden beetles? An astronomer of this city, long since dead, developed in youth a passion for mathematics and later in life a love for the study of the starry heavens, and chemistry; but he could never comprehend how any one could find an interest in entomology and, in fact, felt almost a contempt for what he denominated a "bug-man." One man regards as dry and uninteresting a branch of study that is the delight of another. We are born with certain tastes, which are developed by opportunity, and the more decided is the innate passion, the more pleasure is there in its cultivation.

Collecting surgical statistics is a dull, tiresome work to one whose aim is to find the cases contained in books and journals and then consider his labor completed; but to another, whose real work begins where that of the former ends, the labor is one of satisfaction, if not of decided pleasure. In the cause of science and humanity he disregards all difficulties, and as these may increase before him, they only stimulate him to make his record thorough and complete. *Perseverantia vincit omnia* is his motto, as it was with the celebrated anatomist, Hyrtl, who, convinced in his own mind that it was possible to prepare a certain form of injected work, persevered with specimen after specimen until, upon the fortieth trial, he achieved success.

A tabular record should represent not only the cases that have been published, but, also, all that can possibly be collected by correspondence. It should always be arranged chronologically. If an operation is to improve in the percentage of its successful issues, it is important that the cases reported should be presented in the order of their occurrence and that the causes of increased success should be specially noted in the explanatory text. There is very little value in a statistical table that simply states how many patients survived and how many died. It is desirable to know why one lived and another died; whether death was due to a prior condition of disease or directly to the operation; what were the pulse, temperature and general health of the patient immediately before the knife was used; what increase of danger was due to delay in operating; what special method of operating was followed in each particular case; and which form of operation was attended with the least measure of fatality.

The best records are usually those which are confined to the country of the investigator; but not always so, for petty jealousy may sometimes refuse to a neighbor what will be granted to a distant correspondent—we might give several proofs of this fact that have occurred under our own observation. Working by correspondence is most effective and agreeable when two or more, each in a different country, are making investigations and exchanging notes. Thus the first comprehensive Porro record was prepared in Philadelphia and Vienna, and the second in America, England and Italy. As many as five nationalities have been represented in one record, and at present the Sänger Cæsarean method is being investigated by an American, a German and an Italian, all working to the same end and simply with a view to reduce the mortality of an operation long regarded as one of the most fatal in surgery, by disseminating a knowledge of what has already been

accomplished in careful hands. Making searches in a foreign land can readily be carried out, and unpublished cases may often be more easily obtained than in our own country. Few men know how to record accurately their own operations, and some important points will often be left out, even by the best. These must be ascertained by letters of inquiry, in the sending of which there need be no hesitancy, as replies are usually given promptly and courteously.

It is rarely safe to accept, as correct, the work of other statistical writers. The disposition to save trouble, by accepting the data of earlier investigators, has kept in existence errors of long standing, which are now so firmly established that it is almost impossible to get rid of them; such are some of the early fabulous cases in obstetrics and abdominal surgery, as well as others of more recent date. What may be termed student-made researches are apt to contain numerous errors, such as are exhibited to a marked degree in the tables of Dr. Fleetwood Churchill. Hurriedly made collections are generally imperfect. Years have been, in some instances, required for making a satisfactory private research, and, thereby, cases long hidden away have been brought to light for publication.

The following rules will fill all the reasonable requirements of statistical work:

1. A tabular record should be prepared before the general text is written, and the latter should be based upon the facts taught by the former.

2. It is safer to prepare this record *de novo*, than to make it a continuation of the work of a possibly inaccurate predecessor.

3. The cases should be arranged chronologically, and the tabular headings should represent the important facts of each case and operation.

4. Attention should be specially given to the unrecorded cases, which can only be obtained by correspondence, often perseveringly kept up.

5. The record of each case should tell, if possible, the reason for recovery or death; and whether the result was due mainly to the prior condition of the patient, or to the operation.

AN epidemic of yellow fever has developed at Jacksonville, Fla., within the past ten days. People are leaving the city by every known means of exit, but these avenues are being rapidly cut off, and the city already is practically shut in on all sides. Fumigating and inspecting stations are being established under the direction of Surgeon-General Hamilton at all points necessary to make complete the cordon intended to protect Georgia and the surrounding States, which have declared a rigid quarantine against Florida. All infected bedding and clothing is ordered to be burned. The city itself is being depleted, and a camp of refuge for the well, in charge of Dr. Guitéras, of the U. S. Marine Hospital Service, has been established at Bourgoyne, thirty-six miles west of Jacksonville, on the Savannah, Florida and Western Railroad, the National Government supplying the tents. The sick will not be allowed to remain there, but will be sent back to Jacksonville for treatment.

THE committee of the German Chirurgical and Berlin Medical Societies for the establishment of a Langenbeck memorial, has issued an appeal for contributions. The memorial is to consist of a building for the purposes of medical societies and the collection of scientific works. The late Emperor was at the front of the movement, as well as the Empress Augusta.

THE Barcelona Academy of Medicine and Surgery has offered the Gari Prize of 1500 marks ($375) for the best essay upon The Pathogenesis of Gonorrhœa (its Clinical Varieties, Complications, Prophylaxis, with Drawings). The paper must be written in Spanish, French or Italian, accompanied with the usual motto, and handed in before June 30, 1889.

THE distinguished anatomist, Prof. Wenzel Gruber, on account of his health, has given up his work in Russia, and left St. Petersburg, to take up his residence in a milder climate. Setchenow, Professor of Physiology at the University of St. Petersburg, upon the completion of thirty years of teaching, will also shortly withdraw from the University.

THE Pennsylvania and Maryland Medical Union meets this year at Birmingham Park, Chester County, Pennsylvania, on August 30th. Addresses will be delivered by the President, Dr. Rouse, of York, and others.

THE Mississippi Valley Medical Association meets at St. Louis, September 11th, 12th and 13th next. The Society extends a cordial invitation to all members of the profession to attend its meeting. Arrangements for special rates are being made. The first day will be given to the discussion of abdominal surgery; the second, to infant feeding and some obstetric subject. The third day will be taken up with

volunteer papers and a discussion on some neurological subject.

THE authorities of the University of Montpellier have determined to celebrate the sixth centenary of the foundation of the University, at the commencement of the scholastic year, 1889–1890, and foreign universities will be invited to send delegates.

A LIST of Chinese medicines, printed for the use of the customs officers of the Treasury Department, reminds us of the strange pharmacy of the mediæval period in Europe. They are imported chiefly for the use of the Chinese doctors of the Pacific slope, and include such alleged substances as tigers' bones, rhinosceros' horn, elephants' gall, asses' glue, snake-skins, fowls' gizzards, dried silkworms, crabs' eyes, dragons' teeth, hedge-hogs' skins, fossil crabs, fossil teeth, horse-tails, straw, glass, cow-hair, Job's tears, "insects of nine smells," puff-balls, ground blood, cows' knees, tree-bugs and centipedes.

AT a recent session of the County Court, at Pittsburg, an interesting case was decided in regard to the amount of a bequest to the Hospital for the Ruptured and Crippled at New York City, the gift being that conveyed by the will of Mrs. Alice B. Schoonmaker. The question at issue was to determine whether the amount of the donation was two thousand or ten thousand dollars. The decree of the court awarded the larger sum to the hospital.

THERE are 16,930 practising physicians in England, a proportion of 1 to every 1642 inhabitants; and an increase in number of 21.7 per cent. since 1881. The largest number is found at Brighton, where there is 1 physician to 727 persons; next comes London with 1 to 939.

PROF. SALVATORE TOMMASI died at Naples, in his seventy-fifth year. He was equally distinguished as a physician and teacher. Tommasi was born in 1813 and graduated in medicine in 1838. He was made professor of internal pathology in 1844, which position he lost in 1849 through political causes. After a sojourn on the Continent, he studied physiology and clinical medicine at Turin. Here he completed his principal work, *Manuale de fisiologia*, which ran through three editions. In 1865 he became professor of the medical clinic at Naples, after having occupied the same chair at Pavia for five years.

PROF. KRAFFT-EBING, of Gratz, will succeed Prof. Leidesdorf in the conduct of the Insane Clinic at Vienna.

REVIEWS.

CHOLERA AND WATER IN INDIA. By M. C. FURNELL, M.D., F.R.C.S., Companion of the Indian Empire, Fellow of Madras University, late Surgeon-General and Sanitary Commissioner, Madras, etc. 8vo. pp. 45. London: J. & A. Churchill, 1887.

THIS is a popular lecture delivered at Madras in 1882, in which the author cites facts in support of the statement that water is the chief means by which cholera is spread, especially in India, and that on account of the *peculiar treatment* of water in India that country is constantly subject to the most terrible epidemics of this scourge. The experience of towns which have abandoned polluted water is presented as proof of the proposition that a pure and uncontaminated water supply is the thing most essential in conferring immunity from this disease. The lecture closes with practical suggestions on the water-supply of India.

THE PHYSICIANS' LEISURE LIBRARY. Number 7. THE MODERN TREATMENT OF PLEURISY AND PNEUMONIA. By G. A. GARLAND, M.D. George S. Davis, Publisher.

ALTHOUGH we are more than ever convinced of the difficulties and dangers involved in making books on treatment, to the exclusion of pathology and diagnosis, we must admit that in the present instance the author has so combined a judicious selection of the material and an attractive style as to furnish a very readable volume. Nor has the author omitted all mention of diagnosis. Under the heading "thoracentesis" there is a description of some of the diagnostic features of pleural effusion. Pathology is so far represented that as much space is devoted to the etiology of pneumonia as to its treatment, though it must not be supposed that the treatment recommended is based on the advances in pathology here considered. We rather wish the author had illuminated that other dark chapter in medicine, the etiology of pleurisy. Those who wish a clear and concise guide to the treatment of pleurisy and its complications, and a short account of the various forms of treatment of pneumonia, not all of them "modern," will find what they wish in this volume. The proof-reading would bear improvement, the names of foreign journals being incorrect wherever there is the possibility of error.

PROCEEDINGS OF THE NEW YORK PATHOLOGICAL SOCIETY FOR THE YEAY 1887. By JOHN C. PETERS, M.D., Editor. Printed for the Society.

THE most important part of these proceedings is that taken up by the Middleton-Goldsmith lectures of Dr. M. Allen Starr, on "Multiple Neuritis and its Relation to Certain Peripheral Neuroses." Beside this there is the usual abundance of reports and papers on anatomical specimens and other subjects of pathological interest. From the scope and object of the periodical medical press it seems of doubtful economy to compile a volume of proceedings from journal reports alone.

SOCIETY PROCEEDINGS.

CONGRESS ON TUBERCULOSIS OF MAN AND ANIMALS.

Held in Paris, July 25 to 31, 1888.

WEDNESDAY, JULY 25TH.

(*Specially reported for* THE MEDICAL NEWS.)

The Congress on Tuberculosis was opened in the hall of the Faculty of Medicine of Paris.

Prof. Chauveau, President of the Organizing Committee, was elected president of the Congress, with Profs. Villemin and Verneuil as vice-presidents.

PRESIDENT CHAUVEAU delivered the opening address, in which he gave an historical sketch of the recent progress which has been made in the study of tuberculosis, and which has resulted in its being considered as an infectious disease. The infectious nature of tuberculosis, which had been suspected by Morgagni, Andral and Laennec, is to-day, since the researches of Villemin, Koch, etc., a recognized fact. To-day the relation between human tuberculosis and bovine tuberculosis is also a recognized fact, and the possibility of the transmission of tuberculosis from animals to men is of no slight importance.

PROF. CORNIL, of Paris, presented a paper on

TUBERCULOSIS OF MUCOUS MEMBRANES.

One of the most important points to-day, he said, is the penetration of the tubercular bacilli by their simple contact with the mucous membrane. For the penetration of bacilli through the mucous membrane it is not necessary that the membrane be the seat of fissures, lesions or excoriations. All that is necessary is that the virus should be in contact with the mucous membrane. This results from the experiments of Chauveau, Villemin, Parrot, etc. These last experimenters have produced tubercular intestinal lesions in animals only by the ingestion of milk containing bacilli, or even cultures of these bacilli. MM. Tappeiner and Schottelius have also determined, by inhalation from liquids containing tubercular matter, tubercular lesions of the lung.

M. Dobroklousky, who has followed these experiments, has found that fifteen days after the ingestion of bacilli we find tubercles visible to the naked eye, and no trace of diarrhœa in those animals. The superficial epithelium was perfect. Peyer's patches are swollen, and between the cul-de-sac of Lieberkühn's glands we find accumulations of lymphatic cells. The lymphatic ganglia of the mesentery are the first to show tubercular lesions. On the fourth day accumulation of cells could be seen, and well-defined tubercles on the sixth day.

This year Prof. Cornil has studied several tubercular uteri; two of them belonged to old women. In these cases the sexual contagion is quite problematic; in one of them the tubercular lesion was localized in the neck alone, and the histological examination has shown some very characteristic tubercular granulations. The result of this examination, and the seat of the granulations beneath the epithelium in a woman having no pulmonary or peritoneal manifestations, made one believe in a tuberculosis due to sexual contagion. We have no proof of this, but this fact leads us to consider whether, as these tubercles were superficial, they were not due to the penetration of the bacilli from the surface. To establish this fact, Cornil introduced into the vagina of female rabbits, by a glass rod with a rounded extremity, so as not to wound the vagina, two or three drops of tubercular bacilli culture. These different animals were sacrificed, some six, twelve, twenty-four and thirty-two days after the operation, for the purpose of examination. For the first few days the lesions of the neck are those of a catarrh of the neck, great quantity of lymphatic cells, free in the cervical cavity or situated in the glands; a few bacilli are found amongst these cells. On the fifteenth day we see already the formation of small microscopical tubercular follicles beneath the normal epithelium; these small tubercles are immediately beneath the epithelial cells at the free extremity of the villosities or on a level with the glandular culs-de-sac or depressions of the arbor-vitæ. Thirty-two days after inoculation the tubercles can easily be seen with the microscope. This shows that a very small quantity of virus, introduced without any traumatic lesions, will produce tubercular lesions similar to those he had observed in the women. He believes that tubercular infection of the uterus is possible by the genital passage by a very small quantity of tubercular sperm.

We must observe that the epithelium of the neck is formed by a very superficial layer of cells, and that, like the intestinal mucous membrane, these cylindrical cells are easily penetrated, and do not hinder the penetration of liquids and foreign bodies like the stratified pavement epithelium. In this respect, of all the genital mucous membranes of men and women, that of the uterus is the one that opposes the least resistance. The pavement epithelium of the urethra, vagina and bladder is not altogether protective against the bacilli, for we have seen tubercle bacilli penetrate, with lymphatic cells, the mucous membrane of the pharynx; but this membrane was full of tubercles and also inflamed: the epithelial cells were separated "on account of the passage of these migratory cells, and this was the open path for the bacilli."

PROF. NOCARD, of Alfort, then read a paper on

THE DANGERS OF THE MEAT AND MILK DERIVED FROM TUBERCULOUS ANIMALS.

This question seems only to have occupied the mind of hygienists since the publication of the works of Chauveau, Gerlach, Klebs, Bollinger, etc., who have all shown that the meat and milk of tuberculous cows could be virulent; also since Toussaint demonstrated that in a tuberculous cow the blood, urine, tears and vaccine are as virulent as the caseous matter of tubercles.

The milk is only virulent when the tubercular lesions have invaded the glandular tissue; but it is a very difficult matter to recognize tuberculosis of the mammary gland in a cow and at the beginning of the disease, as it also is for a veterinary surgeon to affirm that a gland is not infiltrated with tubercular granulations; one must deal with the tuberculous cow as if the mammary gland was always tubercular. This is the result at which the committee on epizootics had arrived, and the sale of milk from tuberculous cows was forbidden, and only allowed to be given to animals after it had been boiled. In large cities we must never give raw milk, and must always tell the mother to boil the cow's milk before it be given to children. If sometimes it appears necessary to use raw

milk, he recommended the use of goat's milk, for he had never heard of this animal having contracted tuberculosis.

According to the works of Toussaint, it appeared that tuberculosis was a disease in which every part of the diseased organism contained in it the germ of the affection. Bouley admitted this view as well as the International Veterinary Congress of 1883; hence there was no hesitation possible, and every tubercular animal being a public danger was to be destroyed. In 1885, however, Arloing obtained his opinion from the Congress that the meat of a tuberculous animal should be discarded only when tuberculosis had become generalized and had extended beyond the glands in communication with the diseased part.

The Council on Epizootics has obtained an order from the State Council that tuberculosis should be considered as an infectious disease and assimilated to carbuncle. Every diseased animal is to be placed under the care of a veterinarian, isolated and sequestered; the meat to be excluded, if the disease has become a general tuberculosis. The skin can be utilized if disinfected beforehand, and the milk can be given to animals, but must be previously boiled. These measures are quite sufficient, for the meat juice of tubercular cows is rarely capable of communicating the disease.

Out of forty guinea-pigs inoculated with one cubic centimetre of meat juice derived from twenty-one tuberculous cows, one only had died fifty-nine days after inoculation. These facts, compared to those obtained by Galtier, H. Martin, Vallin, Arloing, Chauveau, etc., establish the fact, that tuberculosis can become generalized, if a tubercle ulcerates and opens into a vessel, setting free the bacilli it contains.

From a series of experiments, he found that the meat juice of inoculated animals ceases to be virulent about six days after inoculation; the only bacilli that will multiply are those that are thrown in a part where the circulation is favorable to their multiplication (liver, lungs, glands) the others which are caught in the muscles are rapidly destroyed. His experiments are certainly not perfect, for in his inoculation, he poured into the system all the bacilli at once, while, if a tubercular ulcer opens into a vessel, these bacilli are gradually and continuously poured out; and the danger of generalization by the muscular tissue certainly continues much longer than by his experiments; still it is not to be exaggerated, for he has fed twelve little kittens on tubercular meat for many days, without one becoming tuberculous, and we all know the susceptibility of cats to intestinal tuberculosis. This experiment is especially interesting, because amongst the cows whose meat has been given to these kittens was the one whose meat juice, introduced into the peritoneum of the guinea-pig, had rendered it tuberculous, and the kittens had eaten more than one pound of this meat without showing any signs of the disease. He concludes that the meat of tuberculous animals can be dangerous under certain conditions, but is very rarely so. Whenever it is dangerous, it is so to a slight degree.

JULY 26TH—MORNING SESSION.

DANGERS PRESENTED BY THE USE OF MEAT AND MILK DERIVED FROM TUBERCULOUS ANIMALS, AND HOW TO PREVENT THEM.

M. ARLOING, of Lyons, thinks that we can arrive at the suppression of tuberculosis amongst animals by strict sanitary measures, if tuberculosis be inscribed as a contagious disease, and if, on the other hand, the use of tuberculous animals' meat be prohibited until we find a method to render it innocuous.

He differs from M. Nocard, who, on inoculating forty guinea-pigs with meat juice, had obtained only one diseased animal. He, on the contrary, in his experiments with Prof. Chauveau, had obtained one success on two animals, and Galtier five out of twenty-two. He admits that out of twenty tubercular cows, four are capable of transmitting the disease through the meat. M. Nocard maintains that the muscular tissue is capable of digesting the tubercle bacilli; it is, indeed, a general law, that the microbes rapidly disappear in the blood and muscles, but this is not reassuring, since the animal possesses a tubercular lesion which is capable of supplying bacilli to the muscles all the time, and we cannot affirm that meat at the moment of the death of the animal does not contain microbes.

The large animals are more dangerous, because they are not suspected. As to the cooking of the meat, it is not always reliable, for M. Chauveau and himself have heated to 158° F., for half an hour, tubercle bacilli neutralizing but not destroying them, and we know that underdone meat has not been heated beyond 122° or 140° F. For his part, he objects absolutely to the use of tuberculous animals before we have found a way to neutralize this meat; M. Galtier has tried salting without very satisfactory results. The sanitary measures must not only be taken in the cities but also in the country.

M. BANG, of Copenhagen, said that he had studied, since 1884, to what degree cow's milk is virulent when obtained from tuberculous cows, with a healthy mammary gland. Out of twenty cows two only presented virulent milk; in eight phthisical women never has the milk been found so. The danger is much greater when the milk comes from a tubercular mammary gland; and he did not think, like M. Nocard, that this affection is so difficult of diagnosis. It begins by a diffuse tumefaction of a part of the mammary gland, secreting first a normal milk, which later presents a yellow serum; the secreted liquid is rarely purulent. This affection is not very rare, as we meet with cases every year. Koch's bacilli he has found in the different preparations of milk.

As to the influence of heat on the tuberculous milk he finds, that if milk is heated to 122° to 140° F. only, no benefit is obtained; a higher temperature will destroy its virulence much more. In two series of experiments, tuberculous milk heated to 176° F. produced tuberculosis by inoculation in one case but not in two others. Heated to 185° F., milk was always rendered innocuous. To six rabbits he gave raw tubercular milk; all became tuberculous, four of them remarkably so; two other rabbits took the milk heated to 140° F., two took it at 149° F.; of these four, two only, one of each section, took the disease. Six rabbits who took it heated to 158° F., and two at 167° F., showed no sign of the disease.

M. BAILLET, of Bordeaux, said that his conclusions are far from being in accordance with those of M. Arloing, and rather resemble M. Nocard's. He certainly believes in the transmission of tuberculosis from animals to man, but he does not think it necessary to destroy the meat derived from any tubercular animal. At Bordeaux, out of 22,000 cattle only 40 were found tuberculous, and

out of these 40 only 15 had general accidents; while if we examine the official statistics we find that out of 250,000 inhabitants, 1000 are phthisical, hence the propagation from animal to man must play a very unimportant part.

His conclusions are: As there is no complete identity between the results obtained by accidental or experimental inoculation of tubercular products and those resulting from the direct ingestion of meat derived from subjects suffering from tuberculosis; that the penetration of the tuberculous virus through the digestive tract is an accidental fact, far from being demonstrated; and that it is not sufficiently demonstrated that the meat of fat animals, which have a few tubercular lesions or believed such, are capable of transmitting tuberculosis to man; and as it would be a great loss in a commercial point of view to suppress all these fat animals, he believes that, 1st. Meat obtained from tubercular subjects in whom tuberculosis has become generalized, ought to be discarded; 2d, that, as regards fat animals, during the life of which the existence of tuberculosis was not suspected, the suppression of the meat must take place only if the lungs, pleuræ and lymphatic glands show tubercular lesions; and, 3d, that, in the other cases, it is quite sufficient to suppress from use the organs only which are more or less affected by the disease, and the afferent lymphatic glands and neighboring muscular parts.

M. BUTEL, of Meaux, thinks that we have no right to look to the commercial view of the subject, but rather to the sanitary view; no half measures must be taken, for the danger is great; he cannot himself see why a difference should be made between animals affected by a local tuberculosis and those presenting a generalized affection. We cannot affirm that the meat is in a healthy condition. If we only use half measures; we observe that in Paris only 11 cattle are taken out 263,000. He held that the meat of phthisical animals ought always to be destroyed, and as to the milk, that boiling it is the safest preventive from infection through its medium.

M. GRISSONNANCHE, of Aiqueperse, said that as bovine pulmonary phthisis is observed especially amongst cattle living in herds, it would be important to separate the animals that cough from the others; this would diminish the chances of contagion. The bovine cattle in his district live from four to five months in the open air, without being protected from rain. In the fall they are brought down from the mountains and placed in low hovels, well closed, where air can hardly penetrate; men even will live with them in those places, which are most favorable to contagion. Bovine tuberculosis being transmissible to different species of animals, one can say without hesitation, that it is as easily transmitted to man.

M. VEYSSIÈRE, of Rouen, said that veterinary surgeons must possess a well-defined sanitary regulation, one there can be no two ways of interpreting. In case the Congress should not adopt radical measures in regard to tuberculous meats, it ought to specify accurately what lesions will forbid or allow the use of these diseased meats. Intestinal tuberculosis is not so very rare, as is generally supposed, and the influence of food is not to be disregarded in studying the etiology. He gave the following on this point. In Rouen, out of fifteen cases of intestinal tuberculosis in pigs, three of them came from a knacker and six from milkmen in the neighborhood of Rouen. On the other hand, he has observed in four years, four cases of tuberculosis of calves; two presented a general tuberculosis, two exclusively intestinal lesions. Is that not a proof that tuberculosis is often due to the food used? As to the appearance of the animals, we have to be careful; having seized a very fat cow, and having injected meat juice obtained from her, to two rabbits, they both died.

M. SPILLMANN, of Nancy, said that tuberculosis is very frequent on the Eastern frontier, and takes the contagious form; the cows are in bad hygienic condition, and they are carelessly exposed to contagion, for when one of them dies of the disease no precautions are taken. The mortality of cows from phthisis is thirty to forty per cent.; they are bought at a very low price and sent to the neighboring market, with all the danger of infection. The surest method to prevent such facts from occurring would be to require a certificate of origin, and to recommend the destruction of any diseased animal, presenting even localized tuberculosis.

M. ROSSIGNOL, of Melun, thought that the measures proposed by M. Nicard are amply sufficient, but these measures are never carefully applied on account of the resistance of the proprietor or the weakness of the veterinarian. To render them applicable, proprietors of diseased animals ought to receive a compensating indemnity; and the Congress ought to insist and demand of the Government, the consideration of this subject. As regards the milk, it is more difficult, for we cannot prevent a cattle-breeder from doing with it what he likes.

M. GUIRAUD, of Montauban, said that in his city, for the past six years, 63 phthisical cattle were found out of 15,473, or 4.7 per cent. About 4 animals out of 1000 are seized, but this proportion is not very correct, for the cattle-breeders kill these animals outside the limits of the city, and introduce their meat in pieces. He thought that all tuberculous meat ought to be suppressed; this winter he had seen a fat ox, which obtained a medal, and presented well-marked tubercles.

M. MOULE, of Paris, had observed the frequency of tuberculosis in fowls; this tuberculosis seems to localize itself more particularly in the abdominal viscera, and particularly the liver; hence the danger of infection through this organ, which is often used in the preparations of certain dishes. For a fowl to be sold it ought to be alive, in good health; and if dead, ought to be quite fat, otherwise the viscera ought to be kept in the abdominal and thoracic cavities for examination.

M. VILLAIN, of Paris, stated the method of procedure at the slaughter-houses of Paris; if tuberculosis is localized, and if the animal is fat, the meat is allowed for sale; when the diseased part is suppressed, the animal is entirely seized if there is a general tuberculosis; in a general way, the proportion of phthisical animals is 6 to 1000 in Paris.

EVENING SESSION.

M. SIEGEN, of Luxembourg, had seen a great many tubercular animals at the slaughter-houses of Luxembourg, but has always found it impossible or difficult to distinguish between the two grades of local and general tuberculosis, and he preferred radical measures. He has also succeeded in producing tuberculosis in four pigs which were fed on meat coming from a tuberculous cow. The only way, according to him, to suppress the diseased meat, is to cremate the infected animals.

DR. ROBINSON, of Greenock, did not believe in the half-way method of destroying only the animals present-

ing general tuberculosis; for the past fourteen years, during which he has been meat inspector in Scotland, he found that cases of tuberculosis in animals are rare; and where tuberculosis appeared, on first examination, to be perfectly limited, he found tuberculous lymphatic glands. He came to the Congress for the sole purpose of asking the most radical measures, namely, that, as he thinks it impossible to choose between tuberculous animals, they must all be excluded, even if indemnities had to be given to the proprietors by the government.

M. LAHO, of Brussels, also insisted on excluding all diseased animals, supporting his opinion by the fact that amongst all the cows which have been slaughtered in Brussels, more than 4 per cent. were tuberculous.

The discussion on the first question was then closed, and the President presented the following

PROPOSITION.

"It is necessary to pursue by all means, including an indemnity to the proprietors, the general application of the seizing and total destruction of all the meats obtained from tuberculous animals, whatever may be the specific lesions found in these animals."

This proposition was carried by the great majority of the members of the Congress. Three members only opposed it: MM. Nocard, of Paris; Laurent, of Bar le Duc; Corrado Massa, of Genoa.

HEPATIC AND PERIHEPATIC TUBERCULOSIS.

M. LANNELONGUE, of Paris, said that a few years ago, in a communication to the Academie des Sciences, he called attention to the perihepatic tubercular abscesses, an abscess but little known from a clinical point of view, and the nature and origin of which remained in the dark. He then thought that the liver surface would be one of the origins of these abscesses; since that time he has demonstrated three cases showing intrahepatic tuberculosis, which gives the explanation of certain perihepatic abscesses. The following are the cases:

Case I.—Boy, of thirteen years, had a subhepatic abscess, which had been opened, scraped and inferior border of thorax excised; two months and a half later he died from pleurisy. At the post-mortem, the seat of the trouble was in the liver. At that place a section showed a caseous hepatitis of nearly the entire right lobe; near the anterior border was a soft spot presenting a cavern, the size of a large chestnut, containing caseous, flocculent pus.

Case II.—Girl, of four years, suffered from a subhepatic abscess. This abscess was opened, scraped and the inferior border of thorax resected. At the post-mortem, the right lobe of the liver, opposite the subhepatic abscess, was the seat of two tuberculous abscesses, one of which was divided in two by a partition; the three pockets were filled with caseous pus.

Case III.—Girl, of two years, subhepatic tubercular abscess, occupying the epigastrium and the region of the left lobe of the liver; general symptoms alarming. To destroy completely the subhepatic abscess he resected the lower border of the left thorax. This abscess being well scraped, the liver appeared perfectly healthy, but, by pressing on the organ, he found that pus came out by two orifices distant from each other by one inch, both leading to a single cavity, about the size of a small nut, located in the middle of the hepatic tissue. The two openings were united by the aid of the thermo-cautery; but the child died four days later from general tuberculosis.

If we consider these three cases from an anatomical point of view, we find the existence of two forms of hepatic tuberculosis (outside of tubercular granulation): tuberculosis by infiltration or caseous hepatitis, and cavernous ulceration or tubercular abscess of the liver.

In a clinical point of view, hepatic tuberculosis has no particular signs so long as it is limited to the liver; when combined to perihepatic abscess we can suspect it, for out of seven cases of abscesses three times has he found a tubercular hepatitis the origin and source of these abscesses.

The treatment of the intrahepatic abscesses will only be a secondary stage of the treatment for the cure of perihepatic abscesses, as the diagnosis is too uncertain to be made at once. In these cases of abscess we must examine the liver carefully and evacuate it if necessary, and resect the lower border of the thorax, without rejecting, however, in limited and benign cases the injections of iodoformed ether.

ON AN ORGANISM DIFFERENT FROM KOCH'S BACILLI FOUND IN THE TUBERCULAR LUNG IN MAN.

M. SOLLES, of Bordeaux, said that this organism can be demonstrated first, by inoculation of rabbits with tubercular matter obtained from the human lung. These animals which have been inoculated die after a time, varying from four months to a year, of a disease quite different from tuberculosis, presenting constant and characteristic lesions and a special microörganism. Culture of the rabbit's blood always gives the same organism. By inoculation of this same culture to guinea-pigs and rabbits it produces in these the same pathological influence.

It is demonstrated in phthisical persons by the presence of these same organisms in the sputa and blood of phthisical persons. In sputa the demonstration is a very easy one; in the blood it is more difficult on account of the coagulation of fibrin; but the culture of the same blood on different mediums renders its presence certain.

This organism, which has been taken up to the present time for an insignificant bacterium, is not the tubercle bacillus of Koch; for it does not respond to Ehrlich's reaction as Koch's bacillus, or the one of leprosy. This microörganism looks more like the microbe of erysipelas. In a word, the infection of which he spoke presented the character of a true septicæmia associated with tuberculosis.

STUDY OF TUBERCULOSIS IN LIMOGES.

M. BOULLAND, of Limoges, said that in his city tuberculosis is very unevenly distributed. The poor quarters in the neighborhood of the river and the district occupied by porcelain workmen, the bronchi of whom are continuously irritated by the dust of porcelain clay, are those in whom tuberculosis is more prevalent. In a certain quarter where prostitution is very free, it is also extensively prevalent, which he attributes to contagion through the genital passages. He thinks that not only ought the prostitutes who suffer from venereal disease to be eliminated from those quarters, but also those presenting signs of pulmonary tuberculosis.

TUBERCULAR MENINGITIS IN THE ADULT.

M. KALINDERO, of Bucharest, said that he was convinced that tubercular meningitis of the adult is often difficult of recognition; that in children we might have certain slight attacks which disappear and leave no trace; that in the adult these irregular forms are capable of originating certain forms of insanity. Finally, that meningitis of adults can be localized in certain convolutions and become chronic.

ON TUBERCULAR MENINGITIS DURING PREGNANCY.

M. CHAMBRELENT, of Bordeaux, has had the opportunity to observe three cases of tubercular meningitis in pregnant women, at different periods of gestation, and to make the post-mortem examinations. He concludes that pregnancy does not seem to have a very marked influence on the progress of this disease; that the disease, even at its extreme period, does not seem to influence in any way gestation, or the health of the fœtus. He considers that we are entitled to produce premature labor when the woman has passed six and a half months, and the diagnosis of tubercular meningitis has been well established.

TUBERCULAR HEREDITY AND PREGNANCY.

M. LA TORRE, of Messina, from his researches, concluded that if the father is in a perfect state of health, we constantly shall see the fœtus arrive at a normal development and at the usual time, whatever may be the state of health of the mother. If now the mother is in a perfect state of health and the father, on the contrary, is in a poor condition, the fœtus will never reach in weight above five pounds. Alcoholism, syphilis and tuberculosis can influence the development of the fœtus; and in regard to this last disease, as a result of his experiments on guinea-pigs, he finds that the tubercular spermatic fluid is capable of rendering the ovule tuberculous. Hence, a tubercular father can transmit to his offspring, not only a poor, predisposing condition to the disease, but also the specific disease itself, and a general tuberculosis of the father can very well interfere with the development of the fœtus.

TUBERCULOSIS AND VACCINATION.

M. DEGIVE, of Brussels, drew attention to the proceeding followed in Belgium to obtain pure vaccine virus. When vaccine virus has been obtained from a calf, prepared for that purpose, the animal is killed and a post-mortem made. If it is healthy and shows no trace of tuberculosis, the meat is allowed to be sold; if on the contrary it is tubercular, the vaccine derived from it is immediately destroyed. In less than two months sixty thousand persons have been vaccinated in Belgium without the slighest danger of contamination.

PRESIDENT CHAUVEAU did not think these precautions necessary, admitting that in Paris such precedures were not followed—the vaccine virus is rarely tuberculous, it is very exceptional for it to be so; moreover, experience has shown that it is very difficult to inoculate tuberculosis on a superficial erosion. In presence of these facts it was not necessary to be so strict about vaccination, for we frighten away a good many people from being vaccinated at the expense of the health of the community.

CORRESPONDENCE.

WARNING AGAINST CHLOROFORM INHALATION IN CHILDREN.

To the Editor of THE MEDICAL NEWS,

SIR: For more than eleven years I have placed great confidence in the ability of the tissues of children to resist the depressing effects of chloroform administered as an anæsthetic. Three days ago I was called to see a large, strong girl, between three and four years old, who had fallen upon a large pin, breaking off about one inch of it, which was deeply imbedded along the inner side of the right brachial artery, an inch and a half above the elbow. As the child would not permit any attempt at removal, I administered chloroform, which she strongly resisted. Having removed the stopper from a two ounce phial of the drug, I placed a folded handkerchief against the mouth of the bottle and overturned it twice, which was repeated a second time before the anæsthetic took effect. Afterward, upon examining the phial, it was found that less than one drachm had been employed.

Without the slightest warning symptom, just as an incision was made, there was a sudden blanching of the entire surface and not a drop of blood flowed. To my ear the heart sounds, as well as respiration, had ceased, the child seemed to be dead. Immediately its body was inverted, artificial respiration began, and ammonia applied to its nostrils. In about five minutes, which seemed much longer, an attempt at inspiration was made. Copious emesis occurred in about fifteen minutes, and in an hour the heart beat was rapid, weak and regular.

CHARLES BAUM, M.D.

630 N. BROAD ST., PHILADELPHIA, Aug. 14, 1888.

A VALUABLE REMEDY FOR DIARRHŒA.

IN answer to an inquiry as to the administration of the remedy recommended for chronic diarrhœa, in THE NEWS of August 4th, page 139, M. C. L. informs us that the proper quantity of the chocolate tannin powder to be used is a heaped tablespoonful, which is to be cooked with milk for half an hour, and taken at the morning and evening meals. The quantity named makes a breakfast-cupful.

NEWS ITEMS.

Congress of American Physicians and Surgeons to be held in Washington, September 18th, 19th, and 20th, 1888.

The American Orthopædic Association announces the following preliminary programme:

The Modern Treatment of Chronic Joint and Spinal Disease, by Newton M. Shaffer, M.D., of New York.

Immobilization in Articular Disease.—Reports on the Treatment of Club-Foot by means of the Thomas Wrench, or the "T. T.," by V. P. Gibney, M.D., of New York.

Mechanical Treatment of Senile Coxitis, by Henry L. Taylor, M.D., of New York.

A Practical Point in the Treatment of Pott's Disease of the Spine, by A. B. Judson, M.D., of New York.

An Efficient and Inexpensive Method for the Mechanical Treatment of Pott's Disease, by C. F. Stillman, M.D., of New York.

Rest, in the Treatment of Chronic Joint Diseases, by John Ridlon, M.D., of New York.

Acute Epiphysitis in Infants, by Dillon Brown, M.D., of New York.

Remarks on Lateral Curvature and its Early Treatment, by Samuel Ketch, M.D., of New York.

Osteotomy for Anterior Tibial Curves, by DeForrest Willard, M. D., of Philadelphia.

Description of an Apparatus for Measuring any Inequality in the Lengths of the Lower Extremity, by T. G. Morton, M.D., of Philadelphia.

Hæmatoma Oris, as a Sign of Injury to the Spine in the Superior Cervical Region, by Benj. Lee, M.D., of Philadelphia.

Two Knee-Joint Excisions, by A. J. Steele, M.D., of St. Louis, Mo.

Report on Morton's Operation for the Immediate Reduction of Club-Foot, by H. Hodgen, M.D., of St. Louis, Mo.

Femoral Osteotomy, by Ap Morgan Vance, M.D., of Louisville, Ky.

A Case of Reflex (?) Valgus, by George W. Ryan, M.D., of Cincinnati, Ohio.

Remarks on the Operative and Mechanical Treatment of some Joint Diseases and Injuries; with especial reference to the Hip, Knee and Elbow Joints, with illustrative cases, by W. R. Whitehead, M.D., of Denver, Colorado.

Analysis of Treatment of Seventy Cases of Club-Foot, by E. H. Bradford, M.D., of Boston, Mass.

Bacteria in Ice.—Bacteria, it is now generally known, are not destroyed by temperature as low as the freezing point. At a temperature of 32° to 39° F. bacteria become dormant and are incapable of propagation, but retain their vitality. Experiments have shown that bacteria exposed to a temperature far below zero have, upon being warmed to 43°–54° F., been enabled to resume all their normal functions. It is, therefore, certain that ice frozen naturally or made by artificial processes from ordinary water may contain bacteria and germs. Dr. Carl Fränkel, of the Hygienic Institute, in Berlin, has made some observations in this direction, which have been published in the *Zeitschrift für Hygiene*. Dr. Bischoff, of Berlin, has also made chemical and microscopical examinations of the various kinds of ice, natural as well as artificial, for sale in Berlin. Many of the samples of ice thus examined were found to be as impure and unfit for use as the most impure and unwholesome drinking water. It was remarked that, while the greatest care is observed in the selection of wholesome drinking water, it is most astonishing how little thought or care is bestowed upon the more dangerous impurities contained in ice. The German government finally ordered the discoverer of bacteria, Dr. Robert Koch, to make an official investigation. The method of procedure was that of allowing a centimetre (16 minims) of ice to melt and cultivating the resultant water in gelatin. It was then found that seven specimens of ice, from as many different sources, contained in that quantity of melted ice, from 140,000 germs, the smallest number, to 880,000 germs, the largest number. It was thus conclusively shown that freezing does not destroy bacteria. The most remarkable thing was the varying results, but this can be accounted for by the method of examination and the time thus allowed to elapse between the melting of the ice and the examination. Enough has been shown, however, to prove that American experiments have been fully corroborated by the best European authorities.—*American Analyst*, July, 1888.

The Pharmaceutics of Antipyrin.—Antipyrin, although a fairly stable chemical body, undergoes decomposition in contact with certain substances, occasionally with an undesirable result. One of the most noteworthy incompatibles is the spirit of nitrous ether. This mixture gives rise to a green color, and although the precise nature of the resulting compound is not known, a child suffering from a slight fever, to whom it was given, died shortly after with symptoms strongly pointing to poison. It is, therefore, highly desirable that this incompatibility should be made known as widely as possible.—*Medical Press*, July 28, 1888.

A Princely Physician.—Prince Louis Ferdinand, of Bavaria, has passed the final medical examination qualifying him to practice as a physician. He is the second member of his family who has joined the medical profession.

Erlenmeyer's Morphia Disease.—Dr. J. B. Mattison, of Brooklyn, is translating Erlenmeyer's *Morphia Disease and its Treatment*, the latest and largest work on the subject, which, with notes and comments by the translator, will be brought out during the coming autumn.

CORRIGENDUM.

RESORCIN IN SUMMER COMPLAINT.—Dr. Brooker writes to the *Maryland Medical Journal* that the dose of resorcin used at the Thomas Wilson Sanitarium (see THE MEDICAL NEWS of July 28, page 99) is one-half grain and not two grains, as stated. As resorcin is a toxic remedy, the larger dose might lead to trouble.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM AUGUST 7 TO AUGUST 13, 1888.

LAUDERDALE, J. V., *Major and Surgeon* (U. S. Army).—Promoted to Surgeon U. S. Army, July 28, with rank of Major, to rank from July 3, 1888.

COWDREY, STEVENS G., *Captain and Assistant Surgeon.*—Granted leave of absence for one month,—*S. O. 77, Department of Texas*, July 25, 1888.

APPEL, DANIEL M., *Captain and Assistant Surgeon.*—Ordered to Fort Bliss, Texas, for temporary duty.—*S. O. 77, Department of Texas*, July 25, 1888.

MASON, CHARLES F., *First Lieutenant and Assistant Surgeon* (U. S. Army).—Reappointed July 28, 1888, to rank from July 2, 1888. Reported for duty at Fort Washakie, Wyo., August 2, 1888

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING AUGUST 8, 1888.

WHITAKER, H. W., *Passed Assistant Surgeon.*—Detached from the "Mohican," to proceed home and wait orders.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked. Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS *should be addressed to No. 1004 Walnut Street, Philadelphia.*